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Railway Age

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SIXTY-FIFTH YEAR

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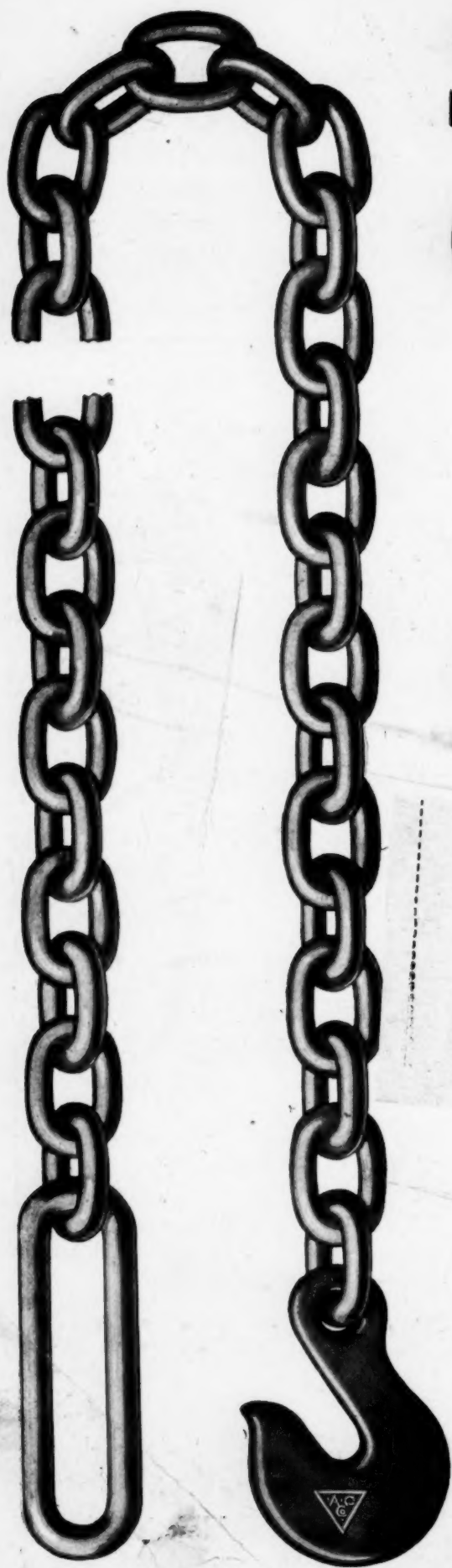
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LARGEST CHAIN MANUFACTURERS IN THE WORLD

EDITORIAL

Railway Age

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One tendency in railway tie purchases during recent years has been toward a greater dependence on supplies obtained

Don't Overlook the Small Tie Producer

off the line, the reason given for this being the depletion of local woodlots along the right-of-way. This is obviously a natural consequence of the reduced forest areas in the more densely settled portions of the country, but it would be well to ascertain if other influences have not been at least partially responsible. Owing to the fact that the small tie producers, farmers and others who deliver ties in small quantities along the right-of-way, have no ready market for their product other than that afforded by the railway, these men are required to sell their ties at the prices fixed by the roads. In at least a few instances railways have been accused of establishing schedules of prices without a proper regard for the cost of production and there is a feeling on the part of some students of tie marketing that this condition has had a pronounced influence in reducing local tie production. One authority on this subject declared recently that if the railways which formerly obtained ties along their own lines would make suitable adjustments of the prices offered to the local tie producers large supplies of ties could be developed along their lines for less money than they are now paying in the open market. In view of the present need for the most scrupulous economy, it would be well for railway officers to study this situation carefully.

That British railway supply manufacturers have made great progress during the past year toward regaining their export

Britain's Railway Supply Exports Increase

trade is shown by the reports of the Board of Trade for the eleven months ending November 30. The exports of locomotives during the period were valued at \$18,192,387 (on the basis of \$3.50 to the pound) as against \$4,898,330 for the similar period in 1919. The improvement in the export figures for rails and freight cars, while marked, was not in as great proportion. The exports of rails were valued at \$8,535,614 for the first eleven months of 1920 and \$6,400,068 for the 1919 period. Similar figures for freight cars are \$18,245,839 and \$7,093,527 respectively. This increase in British exports is no greater than could well be expected upon the gradually returning pre-war production of British industries, especially in view of the heavy investments of British capital in foreign railways and the large orders for railway materials which are placed by the British colonies, the bulk of which under normal conditions are naturally diverted to concerns in the mother country. British manufacturers are, moreover, in a relatively more favorable position in the export trade than their American competitors because of the almost world-wide premium on the dollar. We have heard a great deal during the past five or six years of industrial disorganization in Great Britain and the improbability of an early return of pre-war production in that country. It was even predicted in some quarters that Britain would be a negligible factor in the export trade for many years to come. The 1920 figures, however, prove that British manufacturers have been able to increase their railway exports

to the point where they can supply an increasingly large part of the demands of the colonies and of the British-owned roads in South America and elsewhere. In view of the great improvement shown in 1920 it is apparent that the famous skill of the Britisher in export trade was not irreparably lost during the recent world conflict.

A general movement to abandon the block-signal rule "stop and proceed" and to allow trains to pass an automatic

The Stop-and-Proceed Rule

signal (set in the horizontal position) without stopping, would inflict a severe jar on a custom of 60 years' standing; the custom of requiring enginemen to bring their trains to a full stop—a stop prima-facie unnecessary—in circumstances where (according to the general opinion among railroad officers) there is no other way to make sure that the engineman can and will stop, if and when a stop is found to be necessary. But a rule is not necessarily good because it is sixty years old, and the plea of our New Jersey correspondent, printed in another column, is deserving of attention. He wants the opinion of the up-to-date operating officer. That is easily stated; the officer will say that his enginemen are not sufficiently well disciplined; if you give them an inch they will take an ell; on up grades, where excessive speed is impossible, the stop may be omitted with safety, but everywhere else it is as necessary as it is to have derails at the ends of side tracks or to have various other safeguards predicated on the assumption—or, rather, the fact—that good men make mistakes. But unnecessary stops do cause a great variety of difficulties and losses, especially on very busy lines; and it is mortifying to reflect that the biggest reason why we tolerate them is that we have not been able to educate our enginemen as well as we should like to. The superintendent who shall have the boldness to allow enginemen everywhere to pass automatic stop signals at five miles an hour, at all times when a clear road ahead is plainly visible, and maintain the practice with success for a reasonable length of time, will deserve a medal.

It is perhaps proper to remind the reader that in arguing in favor of hastening trains past stop signals, we have not

The Use of Block Signals as Teachers

forgotten the value of a stop to aid the dull or shortsighted engineman in learning that it is for his own interest to slacken speed enough to increase the distance between himself and the preceding train. In the great majority of cases it is desirable to let the train ahead get far enough away to give a clear distant indication; and it would be a good thing if enginemen were disciplined to do this much more than they do. The main reason, however, for abolishing the stop is to save the cost and avoid the contingent dangers of stopping, and to avoid delays which are otherwise unnecessary. Some roads have already adopted the rule that on passing a signal giving the caution indication, the enginemen shall shut off steam, even when it is entirely safe not to shut off. This is

simply an element of discipline. Perhaps, when this feature of discipline has been carried out long enough, and its value has become generally appreciated, the same principle can be adopted in connection with signals giving the stop indication.

South America generally does not offer the most promising field to American manufacturers of railway supplies who are seeking foreign markets because the railway lines in most of the countries are owned in large part by British and other foreign capitalists who naturally are prejudiced in favor of products from their own countries. Chile, however, is a notable exception to this general rule; the Chilean railways are for the most part state-owned and are not dominated by foreign capital. The Chilean railways are, therefore, freed from prejudice against American supplies and offer one of the most promising markets in South America for American equipment. American goods must, of course, be able to compete in price and quality with those of foreign manufacturers and arrangements must be made whereby credits at least as liberal as those offered by other countries can be extended when purchases are made. The general railway situation in Chile, a detailed discussion of which will be found elsewhere in this issue of the *Railway Age*, is such that rather extensive construction will probably be undertaken before a great while and consequently the market for materials will become correspondingly more important. It is understood that an effort will soon be made by the Chilean government to place a substantial loan in this country. The outcome of these negotiations will be awaited with considerable interest in view of the fact that the large part of the proceeds of this issue will probably be devoted to the purchase of equipment for the government railways.

Any consideration of ways to increase the productive capacity of railroad shops involves a study of the three important component factors in shop operation: namely, machinery, men and methods. As conditions now stand the first of these factors offers a fertile field for improvement either by the purchase of new machinery and equipment or by obtaining more effective service from that already in use. Present arrangements for replacing worn out shop machinery are entirely inadequate, as shown by the relatively small amounts of money set aside each year for depreciation. In fact, these amounts are so small as to indicate that depreciation must be figured on a basis of thirty or forty years' useful service for each tool. Admitting that some tools now operating in railroad shops have already exceeded this estimated life, their continued use undoubtedly costs the railroads much more than would their retirement. Cars and locomotives have increased both in size and number and it is obvious that they cannot be kept in good repair with the same shop facilities used when equipment was lighter. In addition, many locomotives ten years old and over need the application of modern capacity increasing improvements in order to earn greater revenue. Both repair work and reconstruction programs are being delayed because many railroad shops operate under the handicap of worn out, inefficient machinery, too light for the work. Still further evidence of the need for better shop facilities, including machinery, is afforded by the large amount of locomotive and freight car repair work which has been performed for the railroads recently at outside shops. An informal investigation and checking up of accounts by the Interstate Commerce Commission has apparently shown that this work costs more than when done in the railroad's own shops. The commission asked the roads for an expla-

nation and some of the presidents replied that they felt justified in incurring the additional expense because they needed to have repairs made and were not able to perform the work promptly themselves. Is not this a serious indictment of present conditions and an indication of the immediate need for more and better shop machinery.

Along with the stringent economies that are now being prosecuted so diligently and effectively in all branches of the railway service, there is ample opportunity to instigate certain methods and changes in the maintenance field that will bring about marked economies. As the maintenance of way organization stands today, it has certain faults, somewhat inherent but not by any means incurable, that are exceedingly expensive. Briefly they are concerned with waste labor effort through lack of proper supervision and looseness of organization, the difficulties attendant to the distribution of materials and supplies, the uncertainty as to exactly what the year's work will be, and others, all tending toward an accumulative waste of materials and labor. It is true that this condition has been alleviated in part on some roads by the adoption of various well-thought-out and modern methods with the result that certain phases of the work have been better co-ordinated to the financial advantage of the road. Much, however, remains to be done—in fact, little more than a start has been made so far toward putting the maintenance of way department upon a really constructive and systematic basis. The outstanding need is for a broader view of this question. To illustrate, a certain road has developed an excellent method, including a diagrammatical representation for the efficient handling, purchasing and renewing of rail. Another road has instituted somewhat similar ideas but on a different phase of maintenance work. Both systems have been comparatively successful but neither road has gone beyond its own individual developments, believing in each case that the method will only apply to the one thing. Yet practically every branch of maintenance work can be systematically planned, even diagrammatically represented, with the result that the work will be performed better and cheaper through the tightening-up of the organization, the closer supervision of men and materials and the increased opportunity for more positive and co-ordinated planning. The more thoroughly the work is visualized the more thoroughly it will be done, and thoroughness denotes economy.

The reduction of operating expenses, desirable at all times, is absolutely necessary for many roads just now. There is an easy way to improve the operating ratio temporarily by making drastic reductions in maintenance expenditures. This is a pit that is always open and the usual number of railroad officers will fall into it in the search for economy. It must be admitted that the necessity for reducing expenses in all departments exists and no argument can be advanced against a general curtailment of expenditures but on the other hand the theory that operating expenses cannot be reduced when traffic is declining and that all savings must be effected in maintenance expenditures is fundamentally wrong. Maintenance work on track and structures is necessarily curtailed at this season and this matter will very largely take care of itself during the winter months. In the equipment department, however, the condition is quite different. At the present time on the majority of roads the percentage of locomotives and cars in unserviceable condition is abnormally large. It would be a great mistake to

Chile a Promising Market

Why New Shop Machinery Is Needed

Can Maintenance Methods Be Improved?

Real Economy Versus Mere Retrenchment

reduce forces to the numbers required to do only current maintenance work so long as this situation continues. Under the circumstances, the most desirable method of effecting a saving would be by reducing the cost of transportation. The expenditures included under this one classification make up from 45 to 55 per cent of all operating expenses. There are further opportunities for reduction in wages and fuel costs but the problem is one that requires careful study and close co-operation by the operating and mechanical departments. While many of the factors of expense are governed by local conditions, there are certain fundamental principles that can be applied on all roads and a series of editorials will discuss the application of these principles of efficiency to the reduction of the expense of conducting transportation.

Purchasing and Stores Progress

THERE IS NO DEPARTMENT of the railroad that is developing with greater rapidity than the Service of Supply. In reviewing the progress of other departments it is possible to point to the acquisition of new equipment or the improvement of existing facilities as an indication of the advancement that has been effected. But with the Service of Supply, the structure is an organization wherein the physical equipment is altogether secondary. It would not be difficult to find improvement in material handling facilities, particularly in the more extensive use of tractors and other mechanical means for handling material, or in the completion of new stores facilities as in connection with the new locomotive terminals on the Pennsylvania Lines; but the real progress has been effected in a return to normal operation under private management and in the development of a more definite objective, broader policies and a stronger organization for the purchase and handling of supplies.

During the brief period in which the Stores Section of the Railroad Administration attempted to standardize stores practices throughout the country it was discovered that based upon the performance of the thoroughly efficient railroad, a vast opportunity existed on less efficiently managed railroads for effecting economies in the handling of supplies. While the return to private management has enabled each railroad to resume the pursuance of policies best suited to individual requirements, there is hardly a supply organization on any of the railroads that did not gain something from the earnest work of a few men in Washington who held a very high conception of the Service of Supply. It is a remarkable testimonial to the work of the Stores Section that one of the largest and most progressive eastern railroads should not only alter its stores organization in conformity to the suggestions of the Administration but that the president of this railroad should insist upon a continuation of the new organization plan upon return to private management.

Another interesting development within the year has been undertaken by an important western system in the direction of standardizing stores methods with a view to realizing some of the potential economies attached to the handling of 40,000 different items of material involving many millions of dollars. The task of purchasing these materials and holding stocks to a minimum has become increasingly difficult during a year of price readjustment. Any purchase that could be duplicated a few weeks later at a lower price is often the subject of criticism and many railroad officials who can understand why a retail merchant must reduce his stock at the present moment do not appreciate the fact that a railroad storekeeper must keep his stocks as low as possible for the same reason. One of the encouraging developments of the year, however, has been the growth of a better spirit of co-operation between all departments and the Atlantic City convention which brought the Stores and the Mechanical Sections of the American Railway Association together did much to bring these two departments into closer touch.

How the "National Agreements" Rob the Public

THE EVIDENCE which E. T. Whiter, chairman of the Committee of Managers representing the railways, is submitting to the Railroad Labor Board in the hearings regarding "national agreements" shows that they are the most rotten and indefensible agreements ever entered into by any employers and employees.

They were made by the director general and certain labor unions under government control. Mr. Whiter is cramming the record of the proceedings with cases of employees who, under the agreements and the interpretations of them made by the Railroad Administration's National Boards of Adjustment, have got large amounts of money for which they never did any work, or have got several times as much money as was justified by the work they did. The fact that leaders of the labor brotherhoods are seeking to have perpetuated these robber agreements and the many millions of "honest graft" extorted under them should be sufficient evidence to the public of the sincerity and public spirit which caused them to open the hearings before the Labor Board with wholesale charges of waste and peculation against the managements of the railways.

In his sworn testimony Mr. Whiter has shown that the Pere Marquette Railway was compelled to pay \$9,364 in back pay to four employees because their titles under these agreements were changed by a decision of the director general. A car repairer on the Virginian Railway was paid \$1,000 for work he never did. He was laid off with other employees because there was no work for him to do. When he became entitled under his "seniority rights" to be re-employed the road refused to take him back because his eyesight was defective. The road was compelled to pay him from the time his "seniority rights" would have entitled him to re-employment because he had not been told his eyesight was bad when it laid him off!

A train on the El Paso & Southwestern was delayed one hour and thirty minutes and an employee was paid *five hours' time* for making repairs to a window which took *thirty minutes*, when a foreman who was present could have done the work without delaying the train.

A machinist on the Santa Fe for 77 days performed the duties of a night roundhouse foreman while the foreman was sick. The foreman's pay for this time would have been \$665, but the machinist for substituting for him received \$921.

Four car men on the same road were sent out on the line to do a piece of work that took 4 hours and 33 minutes. The company was compelled to pay these men for 112 hours' work.

Five machinists on the Norfolk & Western were sent to an outlying point where they actually worked eight hours per day for three days. Each of them had to be paid straight time for the 24 hours they did work, and time and a half for 72 hours they didn't work.

The Shop Crafts Agreement provides that when employees are required to check in and out on their own time they will be paid for one hour extra at the close of each week, no matter how few hours they may have worked. This rule in the first six months of 1920 cost the western roads \$2,730,166, the eastern roads \$2,913,548, and the southern roads \$801,944, a total of \$6,445,658 for work which never was done. In an entire year the amount paid under it for work not done would be \$14,500,000. And this is but one of the 182 rules in the Shop Crafts Agreement!

Examples of this kind have been cited almost without number. The public naturally will ask how rules governing working conditions and wages which would produce such results could ever have been put into effect, and how they

can possibly be defended. Anybody who will wade through the mass of technical details which is being presented before the Railroad Labor Board can find out. But the fact is, it makes no difference how the rules came into existence or what technical defense of them may be made. They resulted under government control in many millions of dollars being given to the employees for work that never was done. They are having the same effect under private operation, and will continue to have until they are set aside. The public has been and is paying the bill. The farmer who works ten, twelve or sixteen hours a day is paying it. Men who do eight hours' work for eight hours' wages and ten hours' work for ten hours' wages in other industries are paying it. Whatever technical defense may be offered, there cannot be, in the court of reason or fairness, any valid defense made for agreements which result in railway employees getting many millions of dollars a year for work they do not do from people who get paid only for work that they do.

It may be said that outrageous payments for work not done, such as those cited, might be eliminated by revising the national agreements and rules. But one of the main reasons why the national agreements produce such outrageous and indefensible results is that they apply throughout the country regardless of differences in local conditions on the various railways. A rule which is fair on a railway in New England, for example, may be wholly unfair, and produce outrageous results, on a railway in Arizona where the local conditions are wholly different.

The only way to eliminate the enormous wastes caused by the national agreements is to abolish them. The only way to establish rules and working conditions which will be fair to the employees, the railways and the public is to let the individual railways and their own employees make agreements which will be applicable to local conditions. This is what the railways are contending for, and they ought to have the support of the public. The farmer, shipper and consumer are interested in this and all questions relating to railroad costs, because the cost is what makes the rates which all the public have to pay, directly or indirectly.

Baltimore & Ohio

DURING FEDERAL CONTROL the operation of the Baltimore & Ohio was so divided that the properties of that system, constituting over 5,000 miles of line, were under the jurisdiction of six federal managers reporting to the directors of four different regions. These federal managers also had jurisdiction over lines other than parts of the Baltimore & Ohio System. Because of its position with respect to the large coal fields of Pennsylvania, West Virginia and Ohio the Railroad Administration, as a part of its policy of unified operation and control, essayed to utilize the Baltimore & Ohio as a coal carrier and it gave preference to that traffic to the detriment of more lucrative general traffic. These changes naturally had a tendency to upset the normal methods of operation over the system to the extent that some parts of the line were over-burdened with business, while other parts were called upon to handle considerably less business than usual, the decrease being in business carrying higher rates. These considerations, combined with the fact that the latter part of the period of federal control was characterized by high prices for material and labor and a policy of watchful waiting on the part of the Railroad Administration, show that the results of operation by the Railroad Administration of the Baltimore & Ohio for 1919 cannot be taken as an indication of what that system may do now that it has been returned to its owners to be operated under the new conditions.

The task that Daniel Willard has had before him as president of the Baltimore & Ohio has been—to state the

matter in its broadest terms—to build up the Baltimore & Ohio system. The progress that he and his fellow officers have made, both with respect to the physical development of the property and the adjustment of its position from a traffic standpoint, has been pointed out in these pages on more than one occasion as most noteworthy. While the balanced development was interrupted during federal control, this period was not without some notable achievements; more than \$21,000,000 was expended upon the property largely in the extension of yard and terminal facilities including two large new repair shops, and the addition of approximately \$18,000,000 worth of equipment; the company demonstrated an exceptional ability to produce and handle coal, more than 4,993,684 tons having been originated on its lines or those of immediate connections in the peak period of October, 1919, and there was handled over the line between Cumberland and Martinsburg, which might be termed the eastern throat of the road, a total tonnage of 26,925 tons per mile of line in the same month. Notwithstanding these achievements the Baltimore & Ohio traffic was seriously dislocated and there is now before the company two tasks: to resume the definite program for physical betterment, and also to re-establish its trade position, which was seriously disarranged during federal control.

The physical progress that the Baltimore & Ohio has made under Mr. Willard's administration has been very great and full details concerning it may be obtained from review of the 1916 annual report which appeared in the *Railway Age* of August 17, 1917, page 265. In this connection, it should also be noted that the Baltimore & Ohio has devoted no small amount of attention to building up a diversified business along its lines. The Baltimore & Ohio is primarily a coal road, the proportion of bituminous coal tonnage to total tonnage carried ranging about 45 to 47 per cent. This has possibly been something of a disadvantage because of the amount of traffic carried has varied too closely with the fluctuations in the coal industry. From the standpoint of the industrial department, however, it is an advantage because a new industry proposing to establish itself on the lines of the system can be assured under normal conditions of a cheap and steady fuel supply from the mines served by the Baltimore & Ohio system. Inasmuch as the system extends from Baltimore inland to Chicago and St. Louis with numerous branches to other important industrial centers and traverses some of the richest sections of the United States, it was to have been expected that this industrial development work should have been successful and have brought much high-grade traffic to the road. The fact that Baltimore is one of the country's leading export cities has also had its effect, although just at present export trade in general commodities has fallen off considerably from the war period.

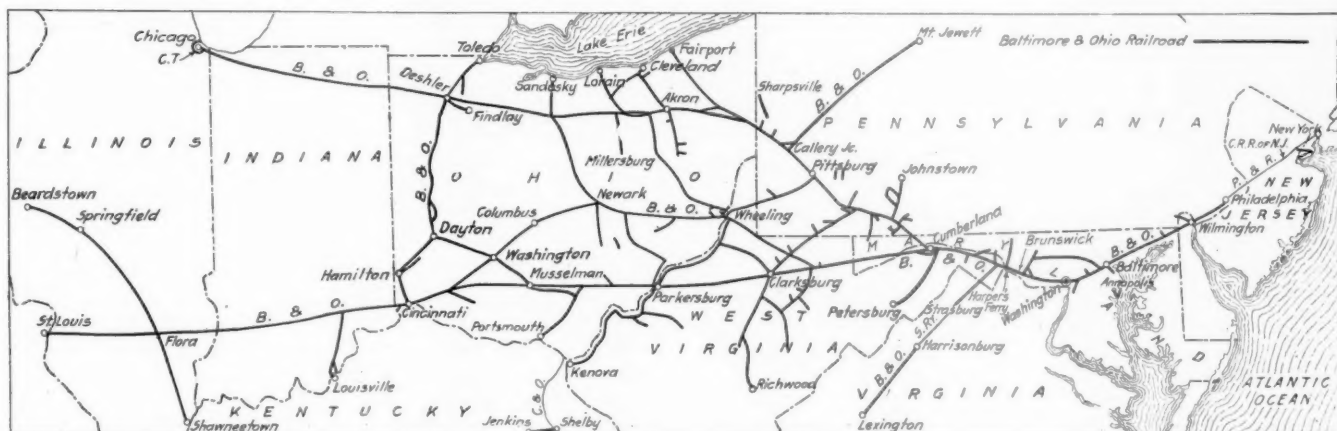
Nevertheless, despite the increase in general business, the Baltimore & Ohio is still primarily a coal road. One of the largest factors in export trade at present is coal. There are many countries of Europe and also in South America that used to depend on Welsh coal. The lack of shipping during the war and the lessening of output because of strikes and other action on the part of the British miners have tended to eliminate this supply so that today America has a splendid opportunity to compete in furnishing the world's coal. Through its up-to-date Curtis Bay pier at Baltimore, the Baltimore & Ohio is in a strategic position to secure its share of this export trade in coal. More export coal is handled through Hampton Roads than through Baltimore, but it will be borne in mind that at the latter place there are the Chesapeake & Ohio, the Norfolk & Western and the Virginian, whereas at Baltimore there are, practically speaking, only the Baltimore & Ohio and the Western Maryland. The dumpings at Curtis Bay are of interest; the figures include bunker and coastwise coal as well as export. For 1915, a pre-war year, the total was 2,600,000 tons; for 1919,

1,900,000 tons. For the first ten months of 1920 it has been approximately 4,000,000 tons. The month of October this year broke all records and was at the rate of over 7,000,000 tons for the year.

It is interesting to sketch the manner in which coal is handled on the Baltimore & Ohio, not only because coal constitutes nearly half the tonnage, but also because it shows in what a favorable position the road is to handle coal, economically. Coal from the Baltimore & Ohio territory comes from five important fields. The West Virginia or Fairmont field supplies approximately one-third of all the coal from these fields; about 75 per cent of the coal from this field moves east. The Meyersdale or Somerset district supplies about 18 per cent, nearly all of which moves east. The Pittsburgh or Youghiogheny district supplies about 13 per cent and about half of this moves east and half west. The Cumberland or Piedmont district, which is the district from whence comes the George's Creek coal, supplies about 8 per cent, nearly all of which moves east. The fifth field, the Ohio or No. 8 field, supplies about 26 per cent, nearly all of which moves west. In addition to this a large quantity of coal is obtained from the Kentucky fields served by the Sandy Valley & Elkhorn. This road is owned by the Balti-

trains are combined into 7,000-ton trains whence they run to Brunswick. They are classified at this point and 5,000-ton trains are run to the tidewater coal pier at Curtis Bay. Like the coal roads at Hampton Roads, the Baltimore & Ohio handles its coal at tidewater with the assistance of a pooling arrangement. Thus cars are classified at Curtis Bay into 29 classifications, of which 14 are pool and 15 non-pool classifications. Under the pooling arrangement a shipper is credited with the coal as soon as it is loaded at his mine. He can then draw upon the particular pool to which his coal is assigned whether the coal he loaded has been received at tidewater or not. The saving in car supply and the facility of operation can readily be appreciated.

The figures in the annual report of the Baltimore & Ohio for 1919, as is customary with the reports of this road, are shown in much more detail than is common with most roads. They show that the total freight revenue in 1919 was \$136,802,852 as compared with \$129,877,038 in 1918; the number of revenue tons carried in 1919 was 88,862,248 as compared with 95,346,229 in 1918. The increase in revenue with a decrease in tonnage is explained by an increase in the earnings per ton mile from .0763 cents in 1918 to .0795 cents in 1919 and an increase in the average haul from



The Baltimore & Ohio System

more & Ohio but does not connect with it. Coal from it moves over the Chesapeake & Ohio to Cincinnati and thence north over the Baltimore & Ohio, Toledo & Cincinnati Division to Toledo. There is sufficient coal from this field so that combined with the large amount of other traffic interchanged with Southern lines at Cincinnati it makes the line from Cincinnati to Toledo one of those of greatest traffic density on the Baltimore & Ohio system.

A study of the map of the Baltimore & Ohio will show that the Fairmont field has a fairly direct route to the lakes at Lorain and the Somerset field a similar route through the Pittsburgh district to the lakes at Fairport. It has been noted, however, that most of the coal from these fields moves east. Inasmuch as the lines from these fields meet near Cumberland, it results that the section from Cumberland east is the portion of greatest traffic density on the Baltimore & Ohio system. The traffic to Curtis Bay moves over the line to Baltimore. A considerable portion of the traffic northbound, however, does not go through Baltimore, but reaches the Philadelphia & Reading at Shippensburg, going over the Western Maryland from Cherry Run or over the Cumberland Valley from Martinsburg.

The line from Grafton east to Cumberland is also of more than ordinary interest. Coal from the Fairmont region is assembled at Grafton. Coal leaves Grafton in 3,750-ton trains, three heavy Mallet locomotives being used to haul these trains up the 2.2 per cent grade to the summit at Terra Alta. At Keyser, a short distance west of Cumberland, these

179 miles to 194 miles. The passenger revenue in 1919 was \$31,724,006 as compared with \$30,871,710 in 1918.

The total railway operating revenue for the year was \$182,620,016 as compared with \$175,259,575 in 1918. The railway operating expenses for the year were \$169,869,125 as against \$161,792,511 in 1918. The net railway operating income for the year was \$5,055,991 as compared with \$7,080,814 in 1918. The standard return for the system was \$30,035,093.

It is noteworthy in this connection that the expenditures for maintenance of way showed practically no increase in 1919 over 1918. The facts in the report show that the road was unquestionably undermaintained, particularly during the late part of federal control. The new steel rail put in track in 1919 amounted to only 28,262 tons, and in 1918 to 40,314 tons; in 1917 the total was 72,263 tons and in 1916, 77,150 tons. Expenses for roadway maintenance and for track laying and surfacing in 1919 also show considerable decreases as compared with 1918, despite increased costs. The road is now busily engaged in making up these deficiencies in maintenance and such figures as man hours for maintenance of way, material applied, etc., for 1920 will show great increases over the period of federal operation.

It is hardly possible this early to essay to determine how the Baltimore & Ohio will fare under the new rates. Nevertheless, it is worth noting that the figures for revenues and expenses for the month of October, 1920, may be said to show a really remarkable change as compared with October,

1919. We give herewith a few of the important items selected from the figures for October.

	October, 1920	October, 1919	Increase
Freight revenues.....	20,614,952	15,087,094	5,527,858
Passenger revenues.....	2,986,463	2,331,643	654,820
Railway operating revenues.....	25,015,395	18,917,768	6,097,627
Maintenance of way and structures.....	3,045,010	2,412,293	632,717
Maintenance of equipment.....	6,000,369	4,904,080	1,096,289
Transportation.....	11,124,014	7,481,750	3,642,264
Railway operating expenses.....	21,101,401	15,413,104	5,688,297
Net railway operating income.....	2,881,282	1,531,457	1,349,825

It is, of course, not advisable to make too much of the figures for one month but it certainly is worthy of comment that the net railway operating income in October, 1920, was nearly double that for October, 1919, despite increases of one-quarter in expenses for maintenance of way and of one-fifth in expenses for maintenance of equipment.

One of the interesting features of the finances of the railroads at present is the use of the revolving fund provided by the Transportation Act. The Baltimore & Ohio was included in the roads whose applications were passed upon by the special committee appointed for this purpose by the Association of Railway Executives. The application of the company was for \$7,087,000, including \$5,000,000 for additions and betterments and \$2,087,000 for improvements to existing equipment. The Interstate Commerce Commission has approved a loan of \$3,000,000 for additions and betterments. It is understood also that the company is expecting to finance the purchase of equipment to a value of approximately \$13,000,000, through the National Railway Service Corporation, headed by S. Davies Warfield, and in that connection the Interstate Commerce Commission has approved a loan of \$5,200,000 from the revolving fund. The Baltimore & Ohio secured from the Railroad Administration 100 Mikado, 30 Pacific, 26 Mallet and 40 switching locomotives and 500 fifty-ton box, 500 seventy-ton gondola and 1,900 fifty-five-ton hopper cars, which allocated equipment was financed through the equipment trust agreement made in January, 1919, between the director general of railroads, the Guaranty Trust Company of New York and the carriers.

It was noted above that the standard return for the Baltimore & Ohio system was \$30,035,093. This figure was inclusive of the compensation for the Baltimore & Ohio itself, and also of the Staten Island Rapid Transit, the Coal & Coke, the Sandy Valley & Elkhorn, and the Baltimore & Ohio Chicago Terminal. The corporate income for the system shows other corporate income of \$3,441,088, this representing chiefly dividend income from shares in companies not included in the Baltimore & Ohio system and the item of miscellaneous rent income. The gross corporate income was \$33,476,181. The net corporate income in 1919 was \$8,580,022, as compared with \$5,042,106 in 1920, the difference in these figures being explained chiefly by the difference in the figures of revenues and expenses applicable to the period prior to January 1, 1918, settled for account of the corporation by the Railroad Administration. The 4 per cent dividends were paid on the preferred stock but no dividends were paid on the common stock both in 1919 and 1918. The 1919 figures include an item of \$1,750,000 income appropriated for additions and betterments to road. The balance transferred to profit and loss in 1919 was \$4,428,088 and in 1918, \$2,656,061.

The following table shows the principal figures for operation under the government in 1919 and 1918. The figures given are for the Baltimore & Ohio system:

	1919	1918
Mileage operated.....	5,154	5,152
Freight revenue.....	136,802,852	129,877,038
Passenger revenue.....	31,724,006	30,871,710
Total operating revenues.....	182,620,016	175,259,575
Maintenance of way and structures.....	26,168,745	26,038,246
Maintenance equipment.....	56,364,804	49,286,380
Traffic expenses.....	1,886,255	1,979,542
Transportation expenses.....	79,727,341	79,344,095
General expenses.....	4,389,465	4,070,420
Total operating expenses.....	169,869,125	161,792,511
Taxes.....	4,872,096	4,829,146
Operating income.....	7,857,724	8,618,088

Letters to the Editor

"Keep Trains Moving"

LAWRENCE, N. J.

TO THE EDITOR:

Your distinguished advertiser who rings the changes on "Signals Keep Trains Moving" is doing a very good thing for those thoughtless operating officers whose spirit of enterprise has been deadened by their worship of the Standard Code, and other ancient formulas; and these behind-the-times members of the railroad profession will be awakened, after a time, let us hope.

But this slogan does not wholly cover the case. The man who rules the signals ought to do a little more effective thinking on the subject of keeping trains moving. You spoke recently of the "tonnage signal," an automatic block signal freed from the absurd rule that when the signal is set against a train the engineman must come to a full stop, even if he can see a clear track for two miles ahead. Why call this a "tonnage" signal? What does "tonnage" mean, anyway? If it is right that the stop rule should be suspended for one train, why not for all trains? If the restriction can be removed at one place, why not at all places? The "tonnage signal" is found mostly on steep grades, but, with the hundred-car trains now in vogue, an ascent of 15 feet to the mile may become a steep grade. In short, this relaxation of the stiff rule of the ancients is needed everywhere.

This rule requiring an engineman to stop his train for no other reason than to convince the officers, or their spotters, that he can stop it, was introduced in the old days of hand brakes and of drawbridges not signaled; and it would seem that we have kept it in force simply because we are too dull to see its absurdity and wastefulness; too slow to use modern facilities and methods which are fairly forcing themselves on our attention.

What can the up-to-date operating officer say against a general movement to abandon the stop-and-proceed rule?

R. H. A.

A Passenger Awards First and Second Prizes for Rough Handling

BOSTON, Mass.

TO THE EDITOR:

Through your columns I wish to ask if, as a penalty for the use of steel cars and heavy locomotives, passengers are forever to be subjected to the jerking of trains when starting. If we are, I think that here is an opportunity for the booster.

It appears to be almost the rule now that a locomotive cannot start a train without backing and creating slack, and this operation and the following start is of the slam-bang order, nerve racking, and when it occurs with sleeping cars, is not conducive to sleep.

In my observation the ——— road is the worst offender and the ——— next.

Furthermore, I am led to think that the quick acting brake is not quick enough, for the brake application nearly always causes a car slam. Those who are studying the rehabilitation of our railroads will, in a consideration of the above features, find something to work upon. The present condition is not creditable.

F. W. DEAN.



The Missoula Gorge. On the St. Paul Near Missoula, Montana

Train Handling with Electric Locomotives*

Passenger Service Requirements and Passenger Train Operation —Helpers Are Not Necessary

By W. S. H. Hamilton

Railway Equipment Department, General Electric Company

PASSENGER TRAINS are run on a schedule which allows a certain running time over a division. This running time is based mainly on the average speed the motive power can make without too great an effort, the nature of the track and the country through which it runs. These last two items are especially important in mountain railroading. It is usually possible in reasonably good weather to make faster time than that called for by the running time without exceeding the limits of safety or comfort to passengers and this allows more or less time to be made up.

The requirements then for the motive power for passenger service are ability to handle certain train weights over a given profile at the speeds required by the schedule efficiently and smoothly, maintaining quite closely the schedule speeds at all times with the trains on time and with them late, to handle them on all parts of the run at the maximum speed permitted by the safety and comfort of the passengers in order that the maximum amount of time may be made up. A large amount of time may be made up by taking advantage of the profile and holding the maximum permissible speed at all times and skillful engineers can make up considerably more time with the same motive power than unskilled or inexperienced ones, simply by taking advantage of conditions.

Electric locomotives for such service are shown in Figs. 1 and 2. The principal dimensions are given in Table I. There are five of the General Electric locomotives which at present are in service on the coast division and ten of the Westinghouse type handling the passenger trains on the Missoula and Rocky Mountain divisions. The original 42

General Electric locomotives are now used to haul freight on all three electrified divisions.

Locomotive Characteristics

The speed tractive effort curves on resistance when motoring for the gearless locomotive are shown on Figs. 4 and 5.

TABLE I—PRINCIPAL DIMENSIONS OF PASSENGER LOCOMOTIVES

	General Electric	Westinghouse
Total weight	521,200 lb.	550,000 lb.
Total weight on drivers.....	457,680 lb.	336,000 lb.
Non-spring-borne weight per driving axle..	9,500 lb.	7,800 lb.
Length over-all	76 ft. 0 in.	88 ft. 7 in.
Height over cabs.....	14 ft. 11½ in.	14 ft. 6 in.
Height over pantograph, locked down....	16 ft. 8 in.	16 ft. 7½ in.
Total wheelbase	67 ft. 0 in.	79 ft. 10 in.
Maximum rigid wheelbase.....	13 ft. 9 in.	16 ft. 9 in.
Diameter of driving wheels.....	44 in.	68 in.
Diameter of idle wheels.....	36 in.	36 in.
Heater capacity	4,000 lb. steam per hr.	4,000 lb.
Water capacity	30,000 lb.	25,500 lb.
Oil capacity	6,000 lb.	750 gal.
Compressor capacity	150 cu. ft. per min.	150 cu. ft. per min.
Number of motors.....	12	12
Type of motor.....	(Bi-polar) GE-100	(Twin) 4-pole

	General Electric		Westinghouse
Locomotive rating:	Tapped field	Full field	house
Total horsepower, one-hour motor rating....	3,480	3,380	4,200
Total tractive effort one-hour motor rating..	36,000	46,000	66,000
Speed, miles per hour.....	36.2	27.5	23.8
Total horsepower continuous.....	3,200	3,200	3,360

It will be noted that there are a total of eight running speeds provided; four full field and four tapped field. The four full field speeds can be used anywhere including mountain grades (1.5 per cent or over), but the four tapped field speeds only on lighter grades or with light trains on mountain grades. The highest full field speed is sufficient to take the maximum train up a grade at a speed slightly

*This is the first of a series of three articles on this subject. The second will deal with freight train operation and the third with the use of helpers in freight service. The author acted as an instructor to engineers on the locomotives used on the C. M. & St. P. from December, 1915, to August, 1917, and from December, 1919, to April, 1920.

faster than the schedule speed and there is another running speed slightly lower which is about right for just making running time. The maximum speed up grade selected for electric locomotives is usually between 25 and 30 m.p.h. on mountain grades and is in excess of that which is made by steam engines when double heading.

In descending mountain grades regeneration is used to control the speed. Two connections of regeneration are available, one covering the range from 20-65 m.p.h. and the other from 10-30 m.p.h. The first connection is the one ordinarily used. The speeds permissible when descending mountain grades (1.5 per cent and over) vary from 20 m.p.h. on grades having bad curves, rocks, etc., up to 35-40 m.p.h. for open straight track. The first limit is set by the ability to stop within a limited distance on account of vision and the second represents about the maximum speed from which the air brakes can be safely relied on to stop the trains. On lighter grades higher speeds may be made but the maximum is usually 50-60 m.p.h.

Regenerative Braking

Regeneration saves the wear and tear on brakes, shoes, etc., and also the jar to the train caused by the repeated applications of the brakes. When operating with steam power on grades with numerous curves the trains are taken down by means of successive applications and releases of the air brakes, never making a heavy application and only occasionally releasing them entirely. This results in a fairly even speed. On the heaviest grades this method cannot be used because of the tendency to gradually apply the brakes hardest on the cars at the rear of the train and put most of the work on those brake shoes. This is the reason for the occasional complete releases referred to above. They are usually made when the train is entirely in a curve or just entering one so that the train will not speed up too much while the brakes are entirely released.

The practice on the heaviest grades, particularly when nearly straight, is to allow the train to accelerate to the maximum speed, say 35-40 m.p.h., allowed on that grade, then a fairly heavy application of the brakes is made and the

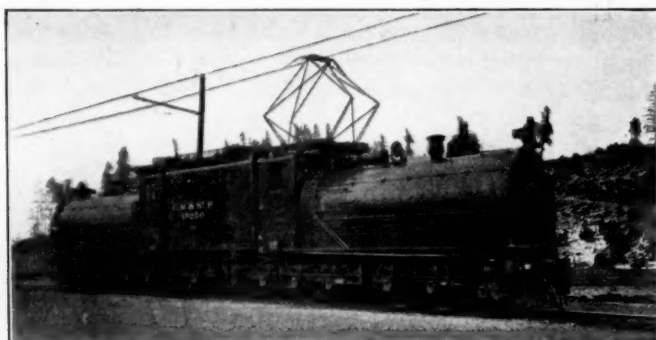


Fig. 1. The Bi-Polar Gearless Passenger Locomotive Built by the General Electric Company

brakes are kept applied until the train slows down to about 15-20 m.p.h., when the brakes are entirely released and the train is allowed to run free until the maximum speed is again reached, which gives time enough for recharging the brake pipe. This results in considerable jar to the train but makes the brakes on all cars apply uniformly. Retainers are not ordinarily used on passenger trains.

This jar is eliminated by the use of regeneration and the train may be held at a uniform speed. Within the capacity of the locomotive this speed may be varied to obtain the maximum desirable for any given part of the grade. This variable speed regeneration is especially desirable when handling train weights less than the maximum, as then a

wide range of speeds can be obtained. Stops for cooling brake shoes and wheels are also eliminated which are required on some grades when operating with steam power.

Little Helper Service Required

The electric locomotive has a big advantage over steam power in that it is entirely feasible to build a locomotive big enough to go over the entire profile and thus eliminate helpers on the heaviest grades. This is best shown by Table II.

With electric operation helpers are not used at all on the passenger trains. The locomotive shown in Fig. 1 weighs

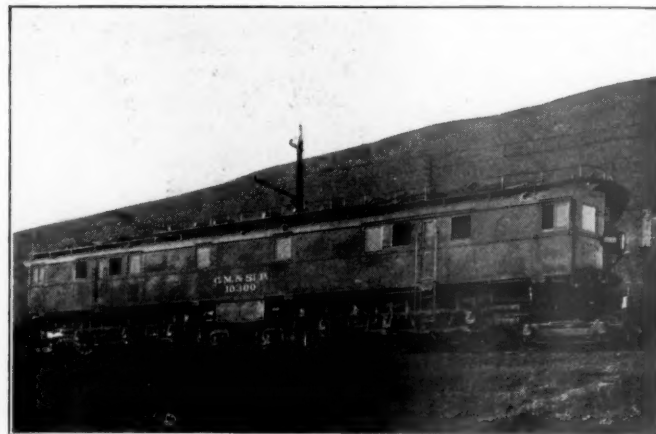


Fig. 2. The Quill-Geared Passenger Locomotive Built by the Westinghouse Electric & Manufacturing Company

265 tons and is capable of handling a 960-ton train, trailing (13 cars) on a maximum grade of 2.2 per cent. This

TABLE II—HELPERS ON C. M. & ST. P. Rwy. STEAM OPERATION

Eastbound Passenger Trains					
Division	Helper station	Helped trains to	Distance	Helpers ran to	Distance
Coast	Cedar Falls	Rockdale	19.2	Rockdale	19.2
Coast	Kittitas	Boylston	10.5	Beverly	29.3
Missoula	Avery	Roland	21.7	Haugan	37.8
Rocky Mountain	Butte Yard	Donald	14.9	Donald	14.9
Total miles electrified divisions					646.2
Total miles helpers required					66.3
Percentage of miles helper required to total miles electrified divisions					10.2
Total helper district miles					101.2
Percentage of helper district miles to total miles electrified divisions					15.7

Note—With trains more than 10 cars or about 735 tons trailing, it was customary to provide helpers on the coast division from Renton or Maple Valley to Cedar Falls in addition to that shown. On the Rocky Mountain division it was customary to double head the train over the entire division from Deer Lodge to Harlowton under this condition.

Westbound Passenger Trains					
Division	Helper station	Helped trains to	Distance	Helpers ran to	Distance
Rocky Mountain	Lennep	Loweth	9.7	Loweth	9.7
Rocky Mountain	Piedmont	Donald	20.7	Donald	20.7
Missoula	Avery	Haugan to East Portal	14.1	Avery	37.8
Coast	Beverly	Boylston	18.8	Kittitas	29.3
Total miles electrified divisions					646.2
Total miles helpers required					63.3
Percentage of miles helper required to total miles electrified divisions					9.8
Total helper district miles					97.5
Percentage of helper district miles to total miles electrified divisions					15.1

Note—The double heading on eastbound trains on the Rocky Mountain division frequently required considerable double heading on the westbound trains in order to return the engines to the proper terminals.

permits it to operate on any grade between Harlowton and Seattle. The elimination of helpers saves considerable time previously required by stops and delays incident to cutting helpers in and out of the trains. Where helper districts form a considerable portion of the division it is certainly best to make the locomotive large enough to handle the train over the entire division alone.

Metering and Air Brake Equipment Used

In order to make more clear the subsequent descriptions of the detailed handling of the trains it seems best to first describe briefly the metering and air brake equipment of the locomotives. This description applies to both passenger and freight locomotives. At each operating position in front of the engineer there is placed a panel on which are mounted two ammeters and the two air brake gages. One of these ammeters has the zero in the center of the scale and indicates to the right, the current being taken by one motor from the line when motoring and to the left the current delivered by one motor to the line when regenerating. It is called the line ammeter. The other ammeter is called the field ammeter, has zero at the left end of the scale and always indicates to the right. It indicates the current in the field of one motor and this is the same as the line current while motoring.

A voltmeter indicating the trolley voltage and a speed-

regenerating and also allows the independent brakes to apply, in case an emergency application of the automatic brakes is made either by the brake valve or from the train. These features are quite valuable and are not installed on the older freight locomotives.

Passenger Train Handling

The handling of passenger trains is less complicated than that of heavy freight trains but a different kind of skill is required for each. The most important requisite is that the engineer must be able to judge braking distances correctly at various speeds when using the air brakes. The locomotive should have a reasonable number of steps in the control so that power may be applied gradually.

In starting a train on a level, or nearly level, track the controller is simply pulled out notch by notch, the engineer meanwhile watching the ground until the train just starts to move, when it is usually pulled out more slowly until the

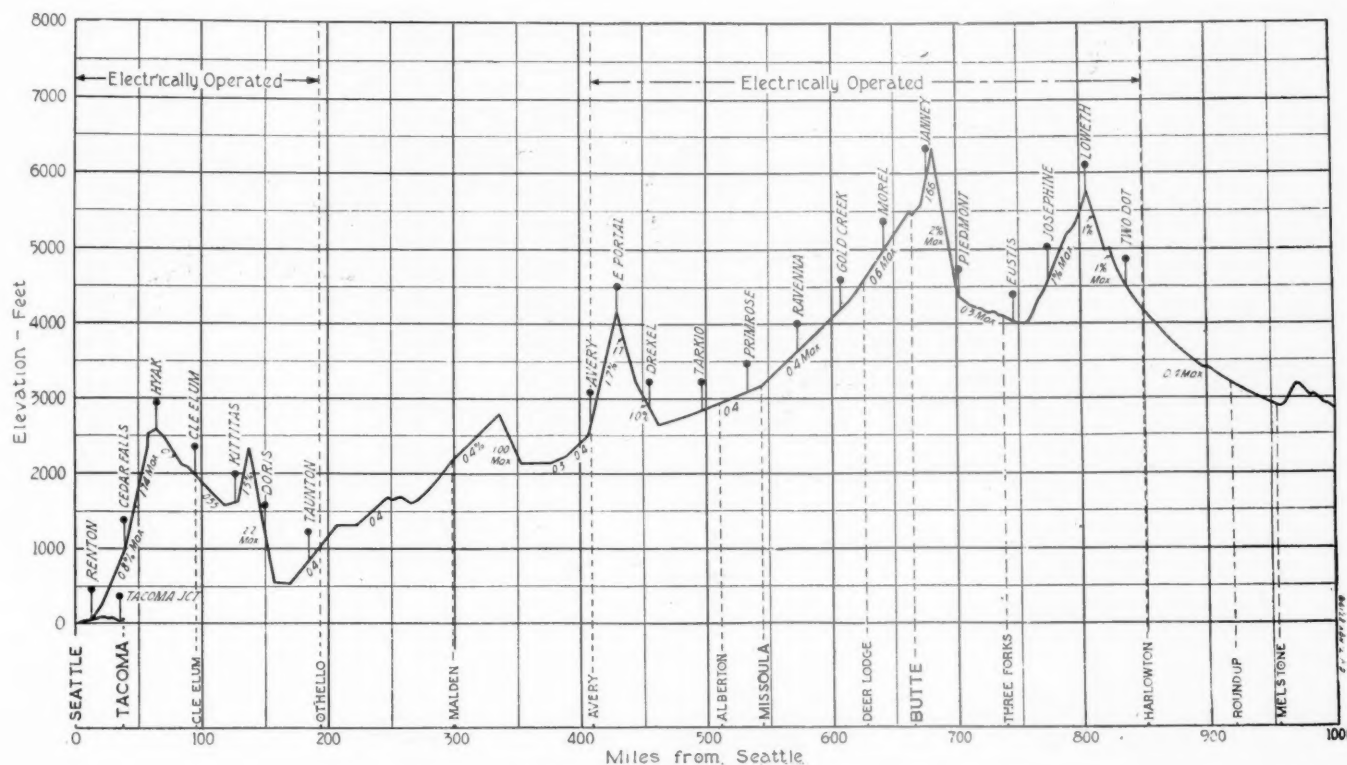


Fig. 3. Profile of the St. Paul, Including the Three Electrified Divisions

ometer are also furnished. The two gages for the air brakes are the same ones furnished on steam engines and show main reservoir, equalizing reservoir, brake cylinder and brake pipe pressures. The air brake equipment is known as the modified EL14 and consists essentially of two ET6 equipments operating together.

At each operating position two inter-connecting brake valves are provided, the automatic brake valve for controlling the automatic brakes on the train and locomotive and the independent brake valve controlling the brakes on the locomotive only, by which they may be applied and released regardless of the brakes on the train.

An electro-pneumatic valve is provided on the bipolar passenger locomotives which keeps the independent brakes released on the locomotive while it is regenerating. This prevents the application of both at the same time, which is liable to slip the wheels. A pneumatically operated switch is also provided which cuts off all power when motoring or

locomotive has moved a few feet, after which the acceleration may be increased to the desired rate. This avoids any slack action or jolting of the rear cars due to the head ones being started too quickly. It is seldom necessary to take the slack when starting a passenger train with an electric locomotive, as is usually the case with steam engines. When necessary it is usually caused by the condition of the rail being such that a high coefficient of adhesion cannot be obtained.

In stopping on the level or on light grades, the controller is shut off and an application of the air brakes made, the amount varying with conditions. Before coming to a stop it is customary to release the independent brakes partly or entirely. This allows the locomotive to stretch the slack out of the train, which permits starting again without any jolts to the rear cars.

Electric locomotives, especially those of the bipolar type, have much less friction than steam locomotives and this is

very noticeable in handling passenger trains on light grades, either ascending or descending. A steam locomotive when shut off at once shoves back against the train and tends to bunch the slack. When making slow-downs for curves it is necessary to keep working a small amount of steam to prevent this action even while the brakes are applied on the train. With the electric locomotive this is no longer necessary, as when power is shut off there is little or no tendency to bunch the train slack.

On grades of about .4 per cent maximum descending the electric locomotive will coast with the train very easily and seems to have about the same friction as the train. On grades of about .6 per cent maximum it is possible to regenerate a little. Steam engines on these grades would require working a small amount steam (drifting throttle).

Starting on Grades

When standing on mountain grades the train is held by keeping the independent brakes applied on the locomotive with brakes released on the train. When it is desired to

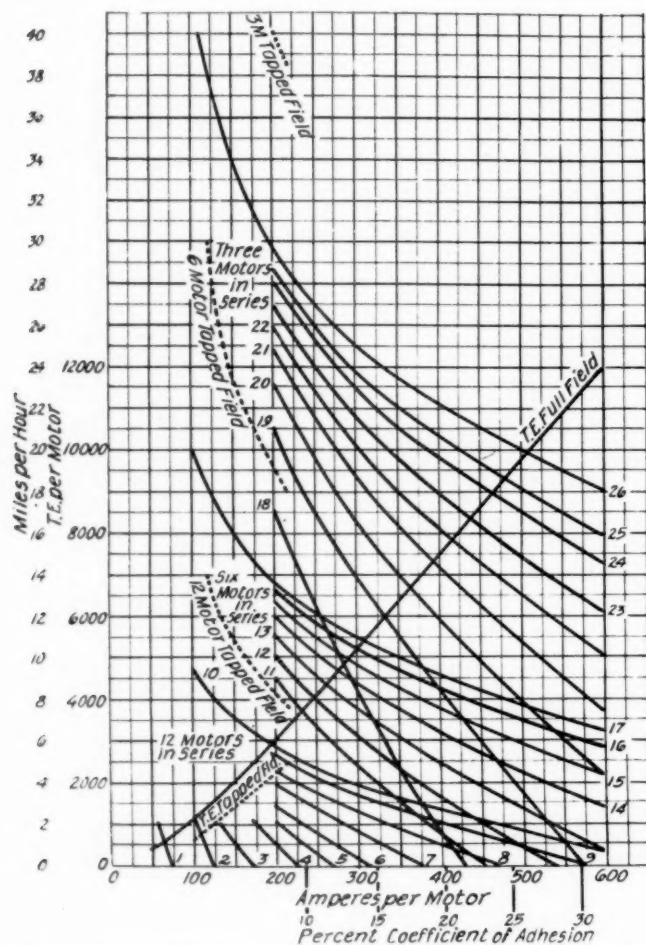


Fig. 4.—Speed-Tractive Effort Curves on Resistance with 12, 6 and 3 Motors in Series for the Gearless Locomotive

start the train, the controller is pulled out two or three notches and the brakes released, the controller being then brought out notch by notch until the train either moves or the locomotive slips its wheels. An experienced engineer keeps close watch on the ground while doing this to see exactly when the train first starts, although he also manages to watch the ammeters so as not to apply too much current. As soon as the train has started moving the controller is held in that notch until the locomotive has moved a few feet, and then the acceleration is continued at the desired rate. This

is usually as close to the wheel slipping point as can be held.

In stopping on an ascending mountain grade the controller is eased off a couple of notches or so at a time until it reaches the second or third notch. With the controller in this position the train is allowed to "stall," the independent brakes are applied and the controller is then shut off.

When taking a siding on an ascending mountain grade the controller is shut off slowly to a notch in which the train will just keep moving. This allows the brakeman to get off

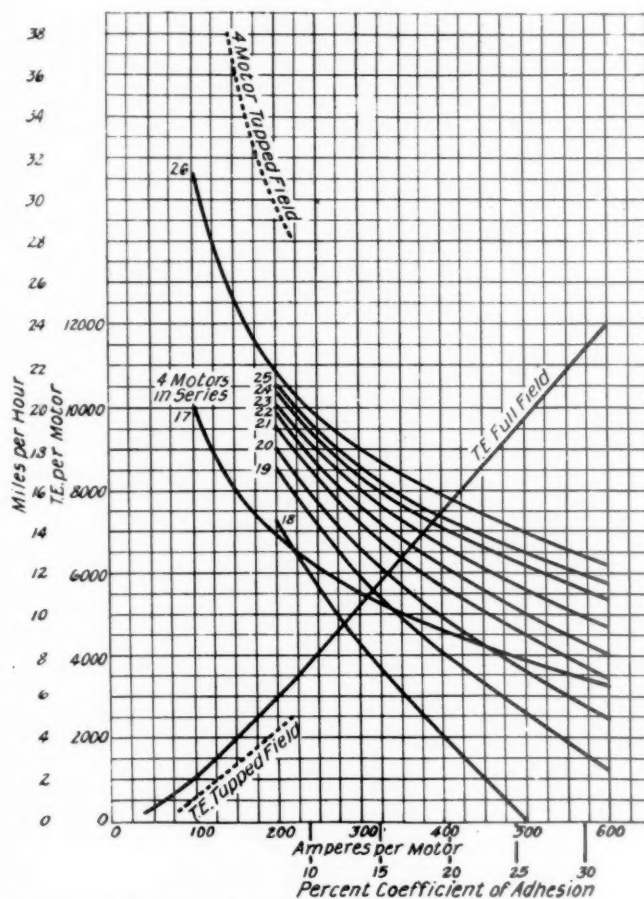


Fig. 5. Speed-Tractive Effort Curves on Resistance with 4 Motors in Series for the Gearless Locomotives

and run ahead to open the switch and allow the train to head in on the passing track without actually stopping. The train is then speeded up by bringing the controller out a few notches, but when the rear of the train is nearly over the switch it is necessary to move the controller back several notches again in order that the rear brakeman may get on after closing the switch without having to stop the train.

The Use of Regenerative Braking

During regeneration four of the motors are used to excite the fields of the other eight which return energy to the line. A separate handle on the controller is used to control the regeneration and this is known as the braking handle to distinguish it from the main handle which controls the acceleration and motor grouping.

Two methods are provided for commencing regeneration. The first method permits of commencing regeneration without interrupting the motoring current entirely although reducing it in amount. This method is very desirable when tipping over the summit of a grade, as then the locomotive passes over into regeneration very easily. Furthermore, some of the grades tip over very sharply, and it is necessary to

keep power applied to the train until it actually gets on the down-grade and begins to speed up. This can be done very conveniently by this method.

The second method was intended for use when starting from rest on descending mountain grades. It allows regeneration to be commenced without any motoring current being applied first. When using this method the train is allowed to start from rest and run free until a speed of 5 to 10 m.p.h. is obtained, depending upon the grade, the independent brakes on the locomotive being used to some extent to control this speed. Regenerative braking connections are then applied, and after they have been fully established, the operation is the same as with the first method. Theoretically, this should allow better train handling than the first method, since there is no motoring first to pull out the train slack.

Practically no difference was found by several months' experience, and the first method is used almost entirely now. From this it may be concluded that any method of applying regeneration to a passenger train will be successful providing that there is not too much motoring at first. In passing it may be noted that in the older geared passenger locomotives supplied the C. M. & St. P., it was necessary to apply full motoring connections before regeneration could be commenced, and these locomotives were very successful in service for several years. They were finally converted into freight locomotives by changing the gear ratio. This was done because at the time they were purchased it was considered desirable to have only one type of locomotive for both freight and passenger service and not to adopt a purely passenger type until more locomotives were required.

When descending a mountain grade regenerating, if it is desired to stop the regeneration is slightly decreased by moving the braking handle back one or more notches, the automatic brakes are applied with a light service application of about 10 lb., and when the line ammeter indicates that the current returned to the line is nearly zero both handles are shut off and the application of the automatic brakes is continued to the desired degree to stop the train. The independent brakes apply on the locomotive as soon as the controllers are shut off. As soon as the train comes to rest the automatic brakes are released on the train and the independent air brakes are applied on the locomotive to hold the train.

In starting again, the independent brakes are released and power is applied to start the train. The controller is brought out to the position where regeneration can be commenced and regenerative braking connections are established as previously outlined.

It is sometimes necessary when regenerating to make slow downs at a faster rate than the regeneration will make them. This is done by applying the automatic air brakes on the train, the independent brakes being kept released automatically. In case the speed should be reduced too much the locomotive will commence to motor and if this becomes objectionable in amount the controller is shut off until the brakes are released and full speed can be resumed. There is no difficulty in using the air brakes and regeneration at the same time.

Kind of Control Required

In order to meet the conditions of train handling as described above successfully, especially those for mountain grade operation, the control equipment of the locomotives must be so designed that power may be applied gradually both to prevent wheel slipping of the locomotive and also to prevent jolts to the train. This requires an ample number of steps of resistance and proper proportioning of the same. The accelerating curves on resistance are shown in Figs. 4 and 5. The increments of tractive effort between steps when accelerating to a maximum of 25 per cent coefficient of ad-

hesion are about 22,000 lb. for the 12 motors. This is about the maximum increment between steps that should be applied to a passenger train. The change in coefficient of adhesion between steps is about 5 per cent, which represents somewhere near the maximum for this weight of locomotive which should be allowed if the wheels are not to slip too easily when going from one resistance step to the next.

Furthermore, if the train is to be handled smoothly the same steps should be obtained when turning off the controller as when turning it on. This bars out arrangements such as used on some trolley cars where the power circuit is opened as soon as the controller is started back toward the off position.

Ample capacity should be provided in the rheostats. The above locomotive can be worked at 300 amperes, corresponding to 14 per cent coefficient of adhesion for about 10 minutes or at 485 amperes corresponding to 25 per cent coefficient of adhesion for about 5 minutes without overheating the rheostats. These values represent approximately the capacity required for mountain grade service.

Regulations for Competitive Bidding Under Clayton Law

THE REGULATIONS issued by the Interstate Commerce Commission on October 6, 1919, governing the method for obtaining competitive bids on transactions covered by the Clayton law, which became effective on January 1, are as follows:

1. When any carrier, subject to the act to regulate commerce, is required by section 10 of the Clayton Anti-trust Act to call for bids for securities, supplies, or other articles of commerce, or for the construction or maintenance of any kind or part of its carrier property such carrier shall prepare specifications, form of proposals and contract, setting forth clearly and so far as applicable in each case in detail a description or descriptions of the matters and things for which bids are requested, the terms, times and conditions of delivery and payment, the place or places where delivery or performance is to be made, the character, amount, and terms of securities offered or sought, and a full description of the supplies or other articles required or offered for sale, hypothecation, or purchase, and shall make and attach to such specifications such maps, drawings, and illustrations and state such other substantial facts or conditions as are or may be necessary to a full understanding of the premises and procedure by bidders. Such specifications, drawings and illustrations in each case shall be kept open at the principal office or offices of the carrier for full examination, free of charge, by persons desiring to examine the same with a view to bidding, and, upon request, such carrier shall furnish to any person or persons desiring the same true and accurate copies of such specifications, maps, drawings and illustrations; *provided* that the carrier may make a charge for such copies so furnished, the charge not to exceed the reasonable cost of making and forwarding the copies requested.

The carrier shall publish in each case a request for bids in at least two daily newspapers of general circulation, at least two publications in each week for two weeks, the first publication to be at least two weeks immediately preceding the day when the bids are to be submitted; one such newspaper shall be published or shall be of general circulation in the city or town where the principal operating office of the carrier is located and the other newspaper shall be published in one other of the following cities nearest to the operating or financial office of the carrier or the place where the contract is to be performed, namely: New York, N. Y., Boston, Mass., Chicago, Ill., St. Louis, Mo., Atlanta, Ga., San

Francisco, Cal., and Portland, Ore.; and a printed copy of the published notice in each case shall be posted in plain view, for two weeks immediately preceding the day on which bids are to be received, on a bulletin board, designated for that purpose, in a public and conspicuous place in the building where the principal operating office of the carrier is located. Such published notices shall describe in general but intelligible terms the proposed contract, giving its serial number, and the special matter or things for which bids are requested, and the date on or before which the bids must be submitted, and the person by whom and the office at which the bids submitted will be received and opened as herein provided. The carrier may in said notice reserve the right to reject any and all bids and may, at its option, require each bidder to tender a bond in a reasonable sum to be therein named, with sufficient surety or sureties conditioned upon the faithful and prompt performance of the terms of the contract.

2. Every bid to receive consideration shall be submitted at the place specified in the notice on or before noon of the day on which the bids are to be opened and the bids shall be opened after noon and before six o'clock, on the day and at the place and by the person or persons designated in the notice. Each bidder may attend in person or by duly authorized representative at the opening of the bids, and shall be afforded an opportunity to do so and to examine each bid. The bids shall forthwith be tabulated in conformity with the form of proposal prepared and a copy of such tabulation shall be promptly furnished to any bidder or his authorized representative upon application therefor.

When required by the notice, each bid shall be accompanied by tender of a bond in the amount specified in the notice with sufficient surety or sureties conditioned upon the faithful and prompt performance of the proposed contract. A bond shall be required only in cases where the notice for bids expressly calls for a bond.

Each bid shall be enclosed with accompanying papers in a plain envelope securely sealed bearing no indication of the name of the bidder or the amount of the bid, and shall be marked "Bid under proposed contract No. —," and shall be addressed to the officer of the carrier designated in the notice to receive the same.

Each bid shall state the name and address of the bidder and, if the bidder be a corporation, the names and addresses of the officers, directors and general manager thereof and of the purchasing or selling officer or agent in that transaction and, if the bidder is a firm, partnership or association, the bid shall give the names and addresses of each member thereof, and of the manager, purchasing or selling officer or agent in that transaction.

3. After receiving and opening bids as aforesaid, the carrier receiving the same shall within 48 hours in cases where the sale or purchase of securities is the undertaking, and within ten days where bids are for supplies, equipment, other articles of commerce and for construction or maintenance work, accept the most favorable bid considering (1) the lowest price or prices for the supplies, equipment, and other articles of commerce, and for the construction or maintenance work, described in the advertisement, and the highest price or prices offered for any securities or property, so described, for sale by the carrier, and (2) the ability and reliability of the bidder, financial and otherwise, to deliver the property or to perform the work or transaction, or to pay for the securities, described in the advertisement, giving due consideration to any bond or security tendered by the bidder. If the right be reserved in the notice all bids may be rejected and the carrier may readvertise for bids. The carrier shall notify the successful bidder of the acceptance of his or its bid, and the bidder shall within ten days execute the required contract, and, if required by the notice, execute a

good and sufficient bond for the faithful and prompt performance of the contract. In case the successful bidder shall neglect or fail within said time to execute the contract or bond as aforesaid the carrier may within five days award the contract to the next most favorable bidder, ascertained as herein provided for determining the most favorable bidder. If neither the most favorable bidder nor the next most favorable bidder shall execute a contract and qualify as aforesaid, the carrier shall readvertise for new bids.

4. Each carrier after having made and executed a contract as and in the manner above specified shall within 30 days after the execution of such contract file with the Interstate Commerce Commission a statement of the transaction giving, (a) a copy of the published notice; (b) the names of all bidders, and, if the bidder be a corporation, the names and addresses of the officers, directors and general managers thereof and of the purchasing or selling officer or agent in that transaction, or if the bidder be a partnership or firm, the names and addresses of the members of the firm, the general manager and purchasing or selling agent thereof, and the total amount of each bid; (c) the name of the bidder to whom the contract was awarded together with a copy of the contract; and (d) if any other than the lowest or the highest bid, as the case may be, is accepted as being most favorable to the carrier, the reasons for such acceptance. The statement shall be made in typewriting, in pamphlet form on pages not less than 8 by 10½ in. in size nor greater than 9½ by 12 in. in size, bound on the longer edge of the page, the paper to be of durable quality fit for permanent record.

5. [*As amended October 4, 1920.*] In the case of each bid so taken as aforesaid, the carrier shall preserve and keep open for examination by the Interstate Commerce Commission or any duly authorized examiner thereof, (a) a copy of the resolution or order of the board of directors, executive committee, or officers of the said common carrier specifying the purposes and terms of the contract for which the bids were invited; (b) a copy of the specifications, maps, drawings, and illustrations upon which bids were made; (c) copies of the notices published, sworn to by or on behalf of the publisher of each paper, respectively, giving the dates and times of publication; (d) the original bids received, designating the bid accepted and giving a statement of the reasons for accepting the same; (e) a copy of the contract entered into between the carrier and the accepted bidder, together with a copy of the bonds if any; (f) references by number of volume and page to the records of proceedings of the stockholders, directors, or executive committee of the carrier. The files in each transaction shall be securely fastened together and given the contract number and each document therein shall be numbered consecutively and at the conclusion there shall be a sworn statement by the president, a vice president, or the general manager of the carrier, stating that the files in No. — contain true and complete records and statements of all the negotiations had in connection with the contract therein set forth. Such files shall not be broken or any part destroyed by the carrier or any officer or agent of the carrier without written authorization from the Interstate Commerce Commission.

SOUTH GEORGIA has been brought into closer touch with North Georgia and the cities of the North, East and West, through the establishment by the Southern Railway of an over-night freight service between Atlanta and South Georgia points. The new train is "The Wiregrass Special." It will leave Atlanta every night at 7 o'clock and Macon at 2 o'clock the following morning, carrying through carded freight to Macon and South Georgia points and making delivery from Atlanta at most of these points the following day. The train will be run over the Georgia Southern & Florida.

Legislation Urged to Require Payment of Guaranty

Railway and Supply Representatives Show Carriers Seriously Handicapped by Treasury's Stand

WASHINGTON, D. C.

THE PRECARIOUS SITUATION in which the railroads have been placed as the result of the ruling of the comptroller of the Treasury, which prevents the Secretary of the Treasury from honoring certificates of the Interstate Commerce Commission for partial payments on account of the nearly \$400,000,000 still due the railroads of their guaranty for the six months following the termination of federal control, was explained on January 14 before the House committee on interstate and foreign commerce by Alfred P. Thom, general counsel for the Association of Railway Executives; Thomas DeWitt Cuyler, chairman of the association; Samuel Rea, president of the Pennsylvania; M. L. Bell, general counsel of the Rock Island and the Minneapolis & St. Louis; Daniel Willard, president of the Baltimore & Ohio, and others. Frank W. Noxon, secretary of the Railway Business Association, also showed how the resulting delay on the part of the railroads in paying their bills and the curtailment of purchases are hurting the supply industry and business generally. The hearing was on the bill introduced by Representative Winslow to amend the guaranty provisions of the transportation act so as to provide clearly what the railroads and the Interstate Commerce Commission had construed it to mean and to require the Treasury to make partial payments without waiting for the months or years required to make the final adjustment of the accounts necessary to an exact determination by the commission of the final amounts due the roads.

Mr. Thom said the situation faced by the roads for the lack of the cash which they supposed they had been guaranteed is so serious as to make it necessary to appeal to Congress for legislation to interpret clearly what it had meant in the law. He said he personally had no doubt that the law as written permits partial payments. A final accounting to determine the exact amounts, which the treasury officials hold is necessary, might take years and it was the purpose of Congress to make the funds available to the roads in the transition period so they could properly perform their duty to the public. The supreme court of the District of Columbia has sustained the Treasury department and the case has been taken to the district court of appeals, but Mr. Thom said the situation will not wait until it can go through the supreme court.

Representative Sims of Tennessee said the Treasury was empty and the money with which to pay the railroads was not there to be paid out.

"I do not understand that we are dealing with an insolvent government," Mr. Thom replied.

No Rich Carriers in Country Today

Thomas DeWitt Cuyler, chairman of the Association of Railway Executives, said in part:

"There is no such thing as a rich carrier in this country today, because balances are held up to the extent of millions of dollars; supplies from material men are unpaid for; most of the carriers have no means of securing further money; they have exhausted their borrowing powers on the securities such as they would have gotten from their strong boxes; exhausted their resources and find themselves in a position where they cannot carry on unless they have some relief under the workings of this act. It is important that this transportation act be applied as stated on its face rather than to be held up for months and months, and possibly years, until these balances are ascertained and then paid. I cannot

impress upon the committee too strongly the situation of the carriers today. It is no fault of the transportation act, except this construction of it by the secretary of the Treasury. I feel justified in saying that it is a very, very serious condition and one that Congress should settle. Congress has stated how the transportation business of this country should be carried on and how can the secretary nullify what Congress has said? It is admitted that large sums are due the carriers and why should not a partial payment certificate be filed which would permit the carriers to at least have something of the amount which is owing to them? Now, a carrier can only borrow for the purpose of paying its fixed charges and operating expenses; it cannot borrow for the purpose of paying dividends. The Pennsylvania Railroad, for instance, has actually earned its dividends but has no cash with which to pay them and it cannot go to the government and get cash; it has exhausted practically all of its resources and cannot go to the banks and borrow money from them."

"What amounts, would you say, are the railroads unable to pay?" asked Representative Barkley of Kentucky.

"I know of one road where there is over 20 millions due now and it might run up into the hundreds of millions," said Mr. Cuyler. "The roads have not the credit and are cutting down to a minimum and ordering just enough equipment for safety and not any for renewals."

Asked if the credit of the railroads is actually exhausted, Mr. Cuyler said: "I did not mean to say actually exhausted, but rather in great jeopardy."

"Do you mean to say that the railroads are potentially insolvent?" was asked.

"No sir; but if the railroads are not granted this relief of these partial payments they will be in a very bad situation," Mr. Cuyler said. "If the bill had been followed out, the terms carried out as meant, the railroads would be in a satisfactory condition and if the railroads can receive partial payments as authorized by the Interstate Commerce Commission the financial difficulties of all the railroads would be greatly benefited. This is neither a charity nor a gift. I think we are entitled to these sums because the government used the railroads and we are entitled to pay for the loss we suffered by reason of the government's use of the railroads."

Mr. Cuyler said the Southern Railway, which did not accept the guaranty, is preparing to sue the government for \$84,000,000 on account of claims resulting from federal control.

Statement by Samuel Rea

Samuel Rea, president of the Pennsylvania Railroad, said in part:

"Since the conclusion of the guaranty period, and although traffic rates have been increased, the resulting net earnings have not at all produced the results anticipated when the rate increases were granted, and although for many of the roads the last four months of the year should produce the largest proportion of their net income for the entire year, that result has not been realized. Consequently, the railroads of the country being unable to obtain payments on account of the amounts due them for the guaranty period, and having no material relief or net earnings resulting from the months following the guaranty period, find themselves very short of cash, so that they are unable either to pay their

current bills for fuel, materials and supplies or to settle their accounts among each other, many of these bills and accounts being long past overdue.

"Applying the situation to the Pennsylvania Railroad system, which carries about 12 per cent of the entire railroad business of the country, there was due for the guaranty period to cover operating expenses and compensation a total of over \$99,900,000, of which there was advanced to it during the guaranty period \$59,100,000, leaving a balance due for the guaranty period of over \$40,800,000. The consequence of this situation is reflected in the position of the Pennsylvania system, where a very large amount of vouchers, due and payable, are being withheld owing to inability to pay the same, and at the same time there is due the Pennsylvania system about \$10,000,000 in traffic balances from other railroad companies, and they for the same reason are unable to make payment. When the condition of all the railroads of the country is considered, it will be seen how largely their inability to pay their current bills is causing financial distress to their creditors and the financial institutions that have been called upon to assist in carrying the burden.

"The remedy for this situation is the passage of the legislation recommended by the Interstate Commerce Commission so as to require the certification and payment of partial amounts due to the carriers for the guaranty period. Further, to authorize the Interstate Commerce Commission in the case of deferred claims, or deferred debits or credits, to railway operating income, which cannot presently be definitely determined, to make reasonable estimates and when agreed to by the carrier to use the same in certifying the amount as final settlement of the guaranty period. This recognizes the fact that special claims for loss or damages to property, or personal injuries, etc., cannot be currently ascertained, and that it is essential, rather than to hold up the final settlement for the guaranty period, to dispose of the same by making a reasonable estimate which can be gaged by experience."

Rock Island Situation Explained by M. L. Bell

Mr. Bell said the Rock Island had no cash when its property was returned by the government except \$4,000,000 for working capital received from the Railroad Administration in accordance with a provision of the transportation act. It got along, however, during the guaranty period, without asking for an advance, assuming that it could get one whenever it was needed, but the back wages took about \$4,000,000 and left it in a position where it could not pay current bills. It owes \$6,000,000 for materials and supplies and about \$6,000,000 on traffic balances, while other roads owe it about \$8,000,000. The company's estimate of the guaranty indicates that \$12,346,000 is clearly due it but no one can say for several months what the exact amount will be. The company has a loan of over \$10,000,000 from the War Finance Corporation which was called for December 1. On explanation of the inability to pay the time was extended and it was suggested that the company try to collect something from the Railroad Administration. It is, however, unable to force a settlement with the Railroad Administration and it is paying about \$2,000 a day interest on its loan while it receives no interest on the delayed guaranty.

The Minneapolis & St. Louis had to ask for an advance on its guaranty every month, Mr. Bell said, and therefore has only \$300,000 to \$400,000 due, but the Rock Island is penalized because it tried to adopt a conservative policy.

Secretary Houston Suggests Other Methods

Chairman Esch of the committee read a letter from Secretary of the Treasury Houston opposing the Winslow bill but suggesting, if Congress desired to hasten the payments to the railroads, that the object be accomplished in another way. For example, he said, the law might be changed to

provide for advances up to July 1, 1921, in the same way it provided for advances on applications filed before September 1, 1920, under which \$264,000,000 has been paid. Or the law might provide for partial payments with a provision that the final claims of the railroads should be filed by September 1, 1921. He took the position that the slowness of the railroads in filing their claims with the commission was the principal cause of delay, entirely ignoring the claims still to be made against the railroads and the adjustment of the maintenance accounts.

"As to the propriety of allowing partial payments of public money to the carriers to sustain them while they prepare additional claims for losses incurred under their own management," he said, "I do not venture to express an opinion, but the government should have a protection not afforded by this bill. The amount of the government's obligations should be ascertained at the earliest possible moment. I should suppose it to be in the interest of the carriers to present their final claims as early as possible."

The plan proposed by the Winslow bill, he said, would cause an unwarranted disturbance of the present financial methods of the government. "The guaranty does not represent compensation for any service rendered to the people of the United States and I can think of no reason why the claims of the carriers under this bountiful provision should be made without proper safeguards." He also objected to the use of estimates by the commission in making certificates, saying that under such a method the commission could not make a certificate which would be final against a subsequent claim of the carrier.

Roads Not Asking for Special

Consideration, Says Mr. Willard

Daniel Willard, president of the Baltimore & Ohio, said the roads are not asking for alms or a bonus or any special consideration. The government is not asked to give the railroads a present. The guaranty was provided because the railroads were required to do business for six months at rates that were admittedly inadequate. The deficits during that period, he said, were due to that fact, to the heavy expenditures necessary to repair the equipment, which was in bad condition, and to the \$200,000,000 or more of back wages which the roads had to pay for the period May 1 to August 31.

The Baltimore & Ohio, he said, has its accounts in such shape now that it could make a settlement with the commission for the amount due except certain items which are indeterminate because claims against the road have not yet been settled. These, he said, would probably be between \$500,000 and \$1,000,000, but there is certainly due the road \$12,000,000 to \$14,000,000 concerning which there is no possible question. This amount should be paid now as a partial payment and the indeterminate amounts adjusted later.

The Baltimore & Ohio owes \$6,000,000 to \$7,000,000 for supplies and has had to practically stop purchases because it cannot see how to pay for them. He had instructed the purchasing agent not to buy any materials without his personal approval. The company is not paying dividends and is not earning its interest. The rates are not compensatory now, he said, but he was hopeful that when business picks up again they will be found to be adequate and said he expected that when conditions become more normal rates can come down again.

Situation a Serious Obstacle to Business Welfare

William J. Hobbs, vice-president of the Boston & Maine, said his road owes \$5,000,000, largely overdue, for materials and supplies, including coal; it has owed over \$7,000,000 to other roads for several months, and over \$1,000,000

of its taxes are overdue. "The situation is extremely acute," he said, "and we are at our wits' ends as to how to meet our obligations or as to how we are to get supplies in the future. The situation is a serious obstacle to the welfare of our business community because people with whom we have contracts find it difficult to meet their own obligations."

Chairman Clark Explains I. C. C.'s Attitude

Chairman Clark of the Interstate Commerce Commission said the commission had never questioned its power to issue certificates for partial payments until the Secretary of the Treasury declined to honor a certificate of that nature. It only asks authority to issue certificates for amounts due beyond peradventure, so that the government will be amply protected, leaving the balance for later adjustment. The commission has certified advances amounting to \$264,000,000 on applications filed before September 1, leaving approximately \$367,000,000 still unpaid, including some \$32,000,000 to the express company, although the exact amount will be affected by claims still to be presented to the railroads which affect their operating expenses for the guaranty period and by the commission's decision as to the amounts which may be charged for maintenance.

"The guaranty was provided," Chairman Clark said, "because it was obviously impossible for the railroads to earn operating expenses, taxes and fixed charges under the rates and wages, which had been fixed by the government, in effect at the end of federal control. It was provided so the roads, during the six months before the rates could be readjusted, could have the same return they would have received if they had remained under federal control. The commission has no choice as to the exact method but it is of the opinion that legislation should be enacted to provide for the payment of sums clearly due and we see no reason why business principles should not apply here as they do elsewhere where people make partial payments on account."

When Mr. Sims asked if it would be necessary for the commission to make further advances in rates, Mr. Clark said that the rate-making rule of the transportation act does not require any given scale of rates but that the railroads shall receive as nearly as may be a certain sum of money. If rates are advanced too much they would tend to reduce the amount of traffic and consequently the earnings. The commission is not required to advance rates to a point where they will not produce revenue.

Effect on Supply Industry

Explained by Frank W. Noxon

Frank W. Noxon, secretary of the Railway Business Association, appeared before the committee on January 15 to explain how the situation is affecting the railway supply industry. He said in part:

"Information began coming to us sometime ago that many railways were holding up accounts due our members and giving as their reason that they could not collect large sums certified as owing to them by the government. The same reason was said to have been given by some roads for not ordering supplies or for requesting manufacturers to delay delivery of goods already ordered.

"Members communicating with us in many cases refrained from stating the amounts overdue them, and in other cases specified the amounts but requested that their names be not published as it might injure them to have their embarrassment become known. It is proper to say, however, that distress attributed to this cause is widespread, that amounts due 60 days or more apparently aggregate several hundred millions and that consequent industrial shutdown and unemployment of labor involve very large numbers of men.

"One large company normally employing in its main works and several subsidiaries many thousand men has fur-

nished us with a comparison of collections now and a year ago, as follows:

"January, 1920, collections, 47 per cent of accounts receivable, indicating a turnover or average collection period of 70 days.

"December, 1920, collections, 23 per cent of accounts receivable, indicating a turnover or average collection period of about 130 days.

"The sales terms of that company are 30 days. On this basis as of December 1 about 66 2/3 per cent of its railroad accounts receivable were overdue. The amount was about \$4,000,000. Accounts due 60 days or more were 40 per cent and totalled \$2,400,000, and accounts due 90 days or more were 12 per cent or \$720,000. The figures quoted are for the parent company. We are informed that a less favorable showing would be reported for the subsidiaries. The interest here referred to sells its appliances to all the railroads throughout the country and its situation may be taken as typical.

"It is clear from what our members tell us that this strain is greatly aggravating their difficulty in keeping labor at work. Many report that they are wholly or partly shut down and others that they fear they soon will be.

Tends to Spread Unemployment

"Members advise that they have been obliged to fall back upon their local banks to carry them. This increases the credit strain on the community and tends to spread unemployment. It also costs the borrower interest which he can never recover. Some members say that the railway accounts overdue them equal from a quarter to a third of their capital. A company which does a business of \$15,000,000 a year, half of it with railroads, declares that it now has to provide \$2,000,000 more working capital than a year ago, and each month of laggard railway remittances adds nearly a million to this.

"One result of the tying up of these payments is that those to whom the roads owe money cannot pay cash for materials and so lose the discounts which they are accustomed to earn.

"Some of our members in the South who deal in lumber say that there is hardship among farmers who are accustomed to cut railway ties but find this market largely or wholly closed to them. Postponement and cancellation of orders has piled up ties and other lumber supplies in the hands of dealers."

Mr. Noxon said that if the railroads should receive their guaranty the effect would be much greater than that represented by the amount of money involved, because a large part of it would be paid to companies that have had difficulty in meeting their own bills and would be passed on to many people. It would greatly stimulate new business and assist materially in relieving the business depression. He said the people he represented did not feel that the present depression will be protracted as a result of economic causes, but that it will only be of short duration unless serious mistakes are made. He said he did not ask that novel or indulgent methods be improvised, but merely that the usual business method of paying on account be followed. "We defer to lawyers," he said, "as to the precise method. What we want is that the situation be met. If money is to be borrowed, it should be borrowed by the government, which can get the lowest rate. Thousands of people are now suffering. These companies are doing their utmost to keep the business depression from becoming worse by keeping their organizations together."

Short Line Railroad Situation "Most Serious"

Bird M. Robinson, president of the American Short Line Railroad Association, said that the situation among the short line railroads is most serious. If a majority do not

secure some relief in the near future a great many will go into bankruptcy. The money due the railroads under the guaranty provisions, he said, is not a contribution but constitutes funds which the government legally and morally owes them. The short line railroads are in dire need of the funds, Mr. Robinson said.

Mr. Robinson said the Interstate Commerce Commission has interpreted Section 204 to mean that only railroads which had an actual deficit could get the benefit of it, but he hoped that after a hearing the commission could be induced to change its interpretation. Very few of the short lines, he said, have filed their claims with the government for the guaranty period because they have had to do so much work to bring their accounting methods within the requirements of the commission and they had received very little benefit from the loan fund. The commission had allocated \$12,000,000 to the short lines at their request, but so far they have received less than \$1,000,000 from the fund because they are not in a position to obtain loans unless a more liberal attitude as to the security requirements is assumed by the commission.

Coal Companies Represented

Charles D. Drayton appeared on behalf of several coal companies, to whom railroads owe three and a quarter millions of dollars for fuel, of which two millions became due in December. The coal companies, he said, in turn owe the money for supplies, so that 400 or 500 concerns are interested. They have been unable to obtain further banking accommodations, and if the fund could be paid to the railroads and in turn distributed through the business community it would have a very important effect in relieving the depression.

Otis B. Kent, general solicitor of the Merchants and

proposed that partial payments be made of amounts declared to be certainly due by the Interstate Commerce Commission so that there was no possibility of overpayment. He said that the Secretary of the Treasury seems to think that the railroads are delaying the presentation of their claims. This is not the case, he said. The railroads want their money as soon as they can get it, but there are many items which enter into the accounts which cannot be known at this time. He suggested that provision might be made in the law that the Interstate Commerce Commission shall prescribe a time within which claims must be presented.

Representative Winslow has introduced a new bill to provide that the American Railway Express Company may receive partial payments on account of its guaranty. A bill has also been introduced in the Senate by Senator Townsend to accomplish the same purpose as the Winslow bill, that is, to authorize the Secretary of the Treasury to honor certificates for partial payments.

Operating Statistics for November

WASHINGTON, D. C.

THE NET TON MILES of freight handled by the railroads in November aggregated 37,458,624,000, according to the monthly summary compiled by the Bureau of Railway Economics. This was approximately 5,000,000,000 less than the total for October, but was about 5,000,000,000 more than that for November, 1919, when the coal strike was in progress, 2,000,000,000 more than that for November, 1918, and 1,000,000,000 more than that for November, 1917.

The average mileage per car per day for November was 26.8, which was greater than that for November of the three

Region	Average miles of road operated	Net ton-miles (thousands)	Freight car-miles (thousands)			Freight cars on line daily		Efficiency ratios		
			Total	Loaded	Per cent loaded to total	Total	Unserviceable	Car-miles per day	Tons per car	Per cent of unserviceable cars
New England Region.....	8,155	936,954	56,121	37,185	66.3	101,217	10,699	18.5	25.2	10.6
Great Lakes Region.....	22,124	6,641,619	342,306	219,670	64.2	420,452	37,061	27.1	30.2	8.8
Ohio-Indiana-Allegheny Region.....	26,542	9,191,701	397,740	251,269	63.2	592,279	37,483	22.4	36.6	6.3
Poconos Region.....	5,339	2,263,748	88,172	51,981	59.0	92,396	7,362	31.8	43.5	8.0
Southern Region.....	37,723	4,484,338	249,581	158,063	63.3	283,063	24,446	29.4	28.4	8.6
Northwestern Region.....	47,394	4,826,908	277,442	172,627	62.2	350,071	27,417	26.4	28.0	7.8
Central Western Region.....	52,218	6,336,959	375,410	233,789	62.3	358,062	25,643	34.9	27.1	7.2
Southwestern Region.....	32,070	2,776,397	157,232	103,968	66.1	221,085	11,484	23.7	26.7	5.2
Grand total—all regions.....	231,565	37,458,624	1,944,004	1,228,552	63.2	2,418,625	181,595	26.8	30.5	7.5

Miners Transportation Company, asked that Section 209 be amended to apply to his company so that it might receive the same guaranty as the railroad-controlled water lines and the other coastwise lines that were relinquished before the end of federal control.

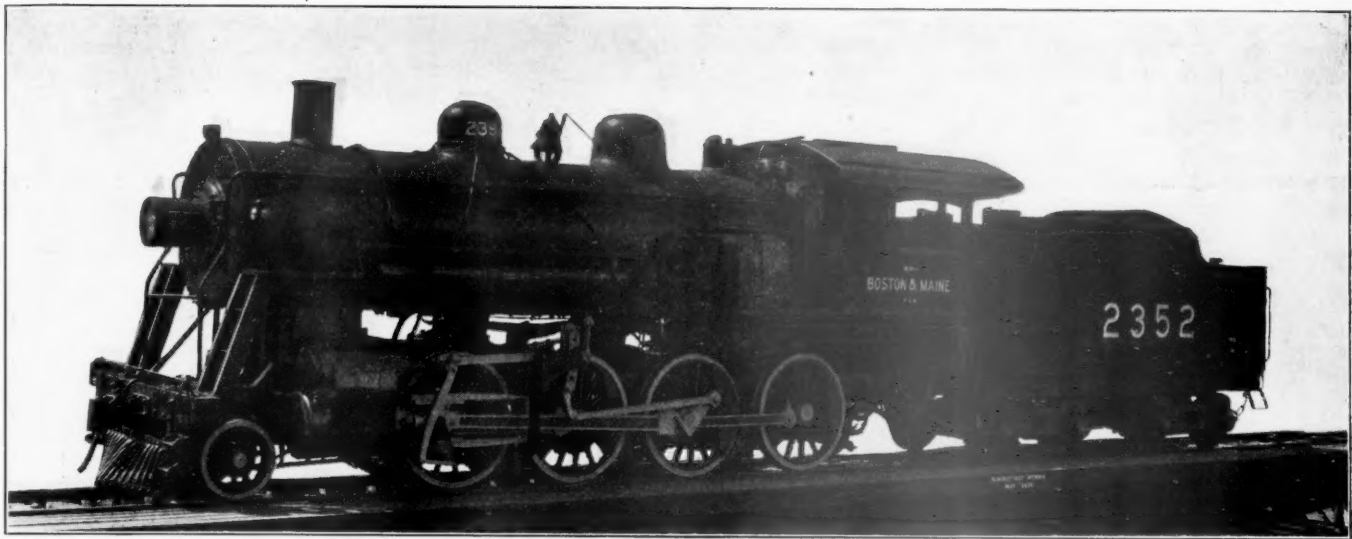
A Concluding Statement by Mr. Thom

Mr. Thom made a concluding statement to reply in brief to the letter of the Secretary of the Treasury. He denied that the provisions of the Winslow bill would upset the time-honored methods of the Treasury Department. He made the point that Congress has made the Interstate Commerce Commission the auditing body for the guaranty payments on the ground that it is the most expert authority on railroad accounting. The Treasury Department had referred the certificates to its auditor, who had held that the Treasury should not honor the certificates, not after an audit of the accounts, but on a construction of the law. He said that in several other instances Congress has prescribed a method of audit independent of that of the Treasury department and that where Congress has provided some other method of audit the accounts need not be further audited by the Treasury department. He pointed out that it was only

preceding years, but was less than the average made in August, September or October, 1920. The average carload, however, established a new record, 30.5 tons. The best previous record for the year was 30.1 tons in September. The Railroad Administration had reported an average of 30.4 in August, 1918.

STOCK DIVIDENDS aggregating \$775,875,932 in par value have been declared since the United States Supreme Court handed down its decision last March that stock dividends are not taxable.

THE WOOD OF THE MANGROVE TREE which is found in French Guiana, is considered by the French as a wood that will not rot. All exposure and efforts to break down its fiber in four years' experiments by the French railway service, have been useless. The grain of the wood is so close as to practically exclude all moisture. Its density is placed at 110, as against 40 for fir and 70 for oak. In addition to this closeness of fiber the mangrove has a large amount of tanning in its composition. This protects it from insects and such blights as mold and damp. While not as brittle as oak, it has twice the resistance to flexion and has about the same potency against crushing and twisting.



The Reconstructed Consolidation

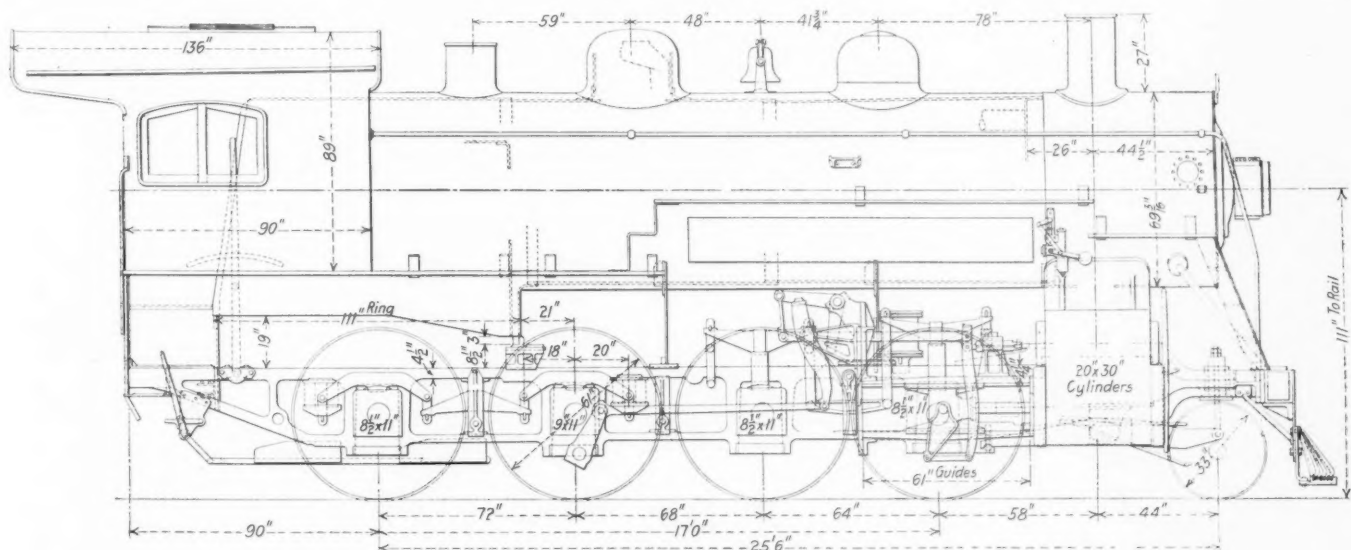
Practical Reconstruction of Old Locomotives*

One of the Most Obvious Steps Contributing to More Intensive
Operation of Motive Power

THE PROBLEM OF ENLARGING the capacity of motive power to meet the ever increasing traffic demands is universal, but the railroads are very rapidly approaching the time when the mere addition of new locomotives will not suffice. It is first necessary for the railroads to get the utmost service out of every locomotive they have. This phase of the subject has already

immediate and obvious solution to a given problem; to neglect the full utilization of what we have, before we ask for more. So it is with locomotives, and many railroads that are perpetually struggling with the financing of locomotive purchases are neglecting the latent possibilities in the power which they have.

One of the reasons why railroads have overlooked the full



Up-to-Date Consolidation Reconstructed from a Cross-Compound Locomotive

been touched upon in articles which the *Railway Age* has published in regard to the locomotive terminals and it will be dealt with at greater length in a subsequent article. The next step must be that of raising the capacity and efficiency of every existing locomotive to the highest pitch. It is a very human inclination to overlook the most

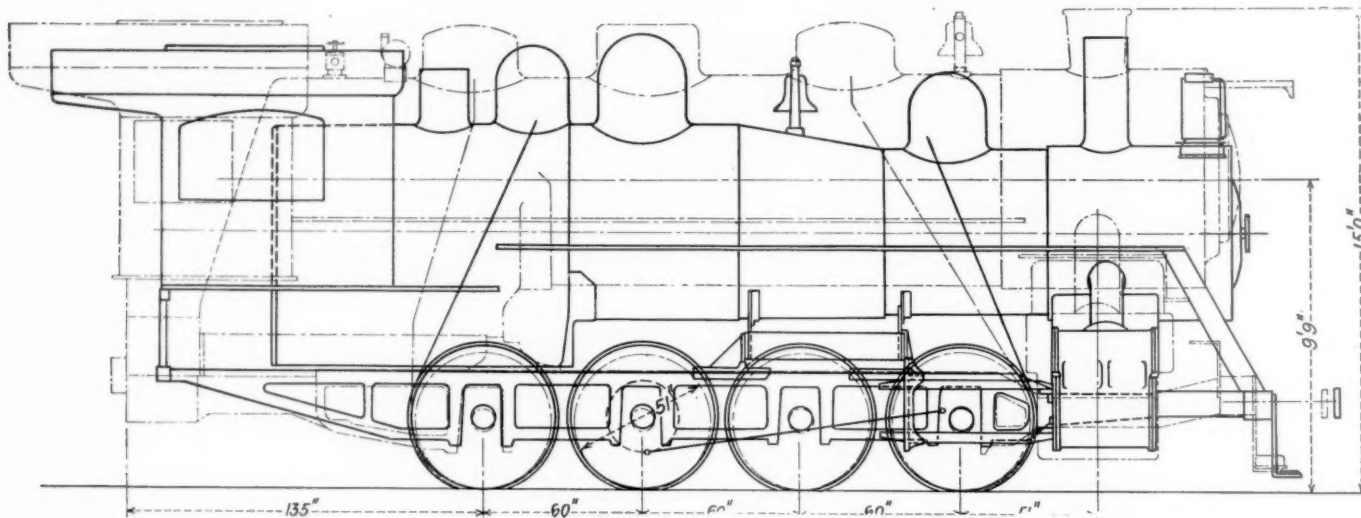
development and utilization of existing locomotives is that they have permitted the very department responsible for this development to go into a partial eclipse. Thus decisions relating to new locomotive details and the disposition of old locomotives are often made by men who are not thoroughly familiar with mechanical matters.

If there is any doubt as to what the mechanical department can accomplish with existing power a survey of what

* The first of a series of articles which the *Railway Age* is planning to publish dealing with the problem of intensive motive power management.

is being done in this direction on a few railroads will prove convincing. The description that follows relates to an important work that is being executed under the direction of the mechanical department of the Boston & Maine. It is not claimed that what has been accomplished on this railroad has not been duplicated elsewhere nor that the mechanical department of this railroad occupies a more enviable position than elsewhere, but the old locomotive problem is an

The motive power problem on the Boston & Maine differs from that of many railroads on account of a large mileage of secondary or branch lines on which there is no occasion to operate very heavy locomotives even if the roadbed and structures would permit. A glance at the map of this railroad reveals a complex network of lines, but aside from a few main freight and passenger arteries, these lines afford no opportunities for a reduction in operating expenses by the



View of Proposed Reconstructed Eight-wheel Switcher Compared with the Standard Eight-wheel Switcher

important one with the Boston & Maine and fortunately the good judgment of the mechanical department has been largely relied upon in the solution of this problem.

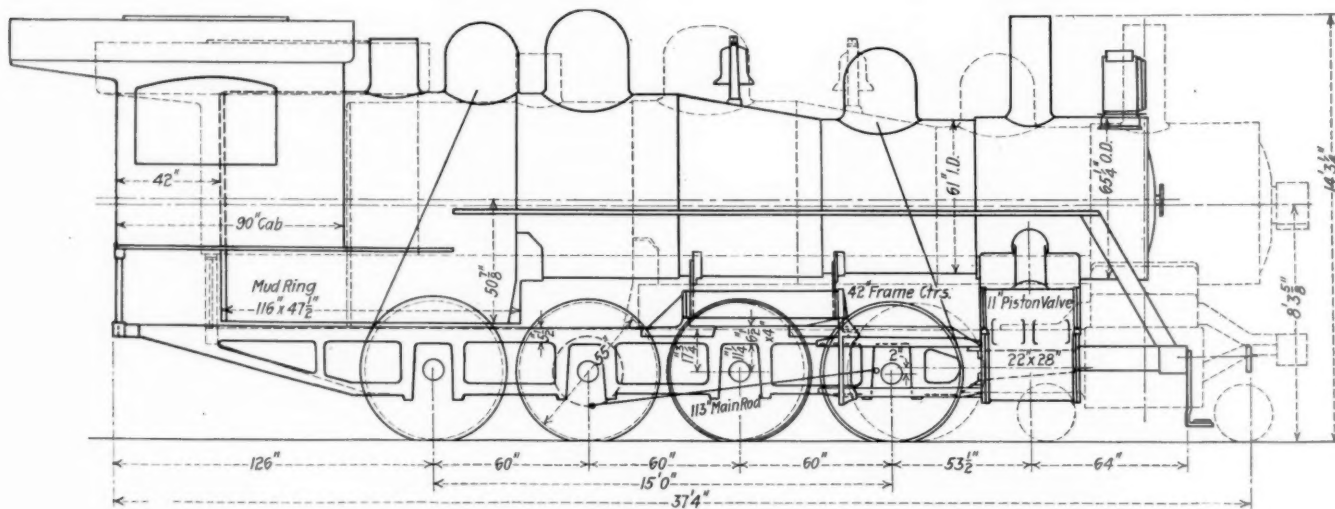
What the Mechanical Department Can Do

In a paper on the subject of increasing the capacity of old locomotives, C. B. Smith, mechanical engineer of the Boston & Maine, recently outlined to the American Society of Mechanical Engineers some of the broad principles ap-

introduction of new and heavier locomotives. But where the motive power cannot be increased in size there is still the opportunity to save in operating expenses by the introduction of more economical locomotives and to reduce maintenance costs by improving the design of motive power.

Situation on the Boston & Maine

There were two ways in which this could be accomplished on the Boston & Maine. The replacement of old locomotives



Eight-wheel Switcher to Be Reconstructed from Twelve-wheel Locomotive (shown in broken outline)

plying to the reconstruction of old locomotives but did not outline the extent to which this work has progressed on the railroad with which he is connected. Some idea as to the breadth of this undertaking may be inferred from the statement that the conversion of more than 250 locomotives was originally contemplated and that nearly 100 of these have now been raised to a standard of efficiency that compares favorably with the most modern power.

with new locomotives, modern in design and equipment, would have effected the desired result so far as the operating and maintenance results were concerned but would have added considerably to the fixed charges which have long been a serious problem with New England railroads. On the other hand the reconstruction of many existing locomotives afforded the same opportunity for reducing operating and maintenance costs and it was found that this could not

only be accomplished with less money than required by an investment in new locomotives but in this way the problem of the old locomotive, uneconomical and difficult to maintain, was disposed of.

Problem of the Old Locomotive

Every railroad has its old locomotive problem and many have in a measure done what the Boston & Maine is doing; but for those railroads with which the old locomotive, relegated to branch line service, is still a white elephant, the following outline of the locomotive reconstruction work undertaken on the Boston & Maine should prove helpful. The reconstruction program of that road has included principally the saturated steam Consolidation type locomotives purchased in 1911 under the direction of the New Haven management, and locomotives of the same class acquired prior to that date.

In all, approximately 150 Consolidation and 40 Pacific type locomotives are involved. Subsequently, the Boston & Maine purchased locomotives of the same type and practically the same weight but equipped with superheaters and other modern appliances. These locomotives have proved to be ideal for many divisions of the railroad and the first step towards reconstruction was obviously in the direction of equipping the locomotives purchased in 1911 with superheaters which is all that is necessary to raise their efficiency and capacity to the standard of the more recent Consolidation and Pacific type locomotives.

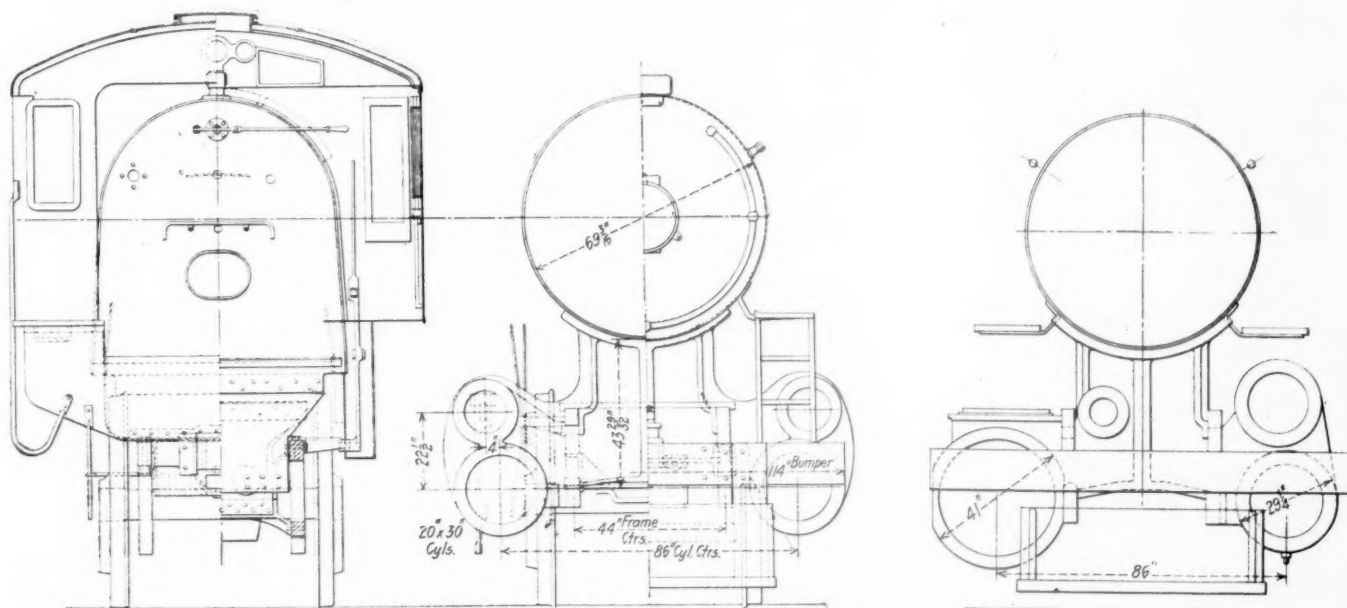
The next step was gradually to extend the application of superheaters to the older Consolidation type locomotives of which there were 110 susceptible to reconstruction. These

the conversion of 10 Cross-compounds with cylinders 22 in. and 35 in. in diameter and 32 in. stroke into modern single expansion, superheater locomotives. The principal dimensions of the original and the reconstructed locomotive are given together with the corresponding dimensions of the more modern Consolidation locomotives which were the first to be constructed.

Principal Dimensions, Boston & Maine Consolidation Locomotives

	K-6		K-8	
Class	Original Built	Reconstructed 1920	Original Built 1911	Reconstructed 1916
Traction effort.....	34,000 lb.	33,400 lb.	40,500 lb.	43,400 lb.
Factor of adhesion.....	4.41	4.58	4.5	4.25
Weight on drivers.....	150,000 lb.	153,000 lb.	182,000 lb.	185,000 lb.
Total weight, locomotive.....	175,000 lb.	178,000 lb.	206,000 lb.	210,000 lb.
Wheelbase, driving.....	17 ft.	17 ft.	17 ft.	17 ft.
Wheelbase, locomotive.....	25 ft. 6 in.	25 ft. 6 in.	26 ft.	26 ft.
Driving wheel diameter.....	61 in.	61 in.	61 in.	61 in.
Valves.....	Piston & slide	Piston	Piston	Piston
Valve gear.....	Stephenson	Walschaert	Walschaert	Walschaert
Cylinders.....	22 in. x 32 in. / 35 in. x 32 in.	20 in. x 30 in.	22 in. x 30 in.	24 in. x 30 in.
Boiler pressure.....	200 lb.	200 lb.	220 lb.	180 lb.
Firebox.....	65 in. x 102 in.	65 in. x 102 in.	71 in. x 108 in.	71 in. x 108 in.
Tubes, number and diameter.....	326—2 in.	165—2 in.	366—2 in.	204—2 in.
Flues, number and diameter.....	.....	24—5 3/8 in.	.....	30—5 3/8 in.
Tubes, length.....	16 ft.	16 ft.	14 ft. 9 in.	14 ft. 9 in.
Heating surface—				
Tubes.....	2,717 sq. ft.	1,380 sq. ft.	2,986 sq. ft.	1,567 sq. ft.
Flues.....	.....	537 sq. ft.	.....	619 sq. ft.
Firebox.....	143 sq. ft.	143 sq. ft.	180 sq. ft.	172 sq. ft.
Arch tubes.....	.....	.....	25 sq. ft.	25 sq. ft.
Total.....	2,860 sq. ft.	2,060 sq. ft.	3,189 sq. ft.	2,383 sq. ft.
Superheater.....	.....	431 sq. ft.	.....	501 sq. ft.

It can easily be imagined just how unsatisfactory a saturated steam cross-compound Consolidation type locomotive



Sections of the Original Cross Compound Consolidation (right) and Reconstructed Consolidation (centre and left)

locomotives, which have been appropriately referred to as being of the "early-modern" design, all have over 30,000 lb. tractive power but lack the refinements that are now recognized as essential to efficiency and capacity. They are arranged in six groups differing in design, according to the date purchased. As the older designs were encountered, it was found necessary to broaden the work of reconstruction so as to include many changes in addition to the application of superheaters.

Reconstruction of Consolidation Type Locomotives

The most interesting development in connection with the reconstruction of the Consolidation type locomotives involved

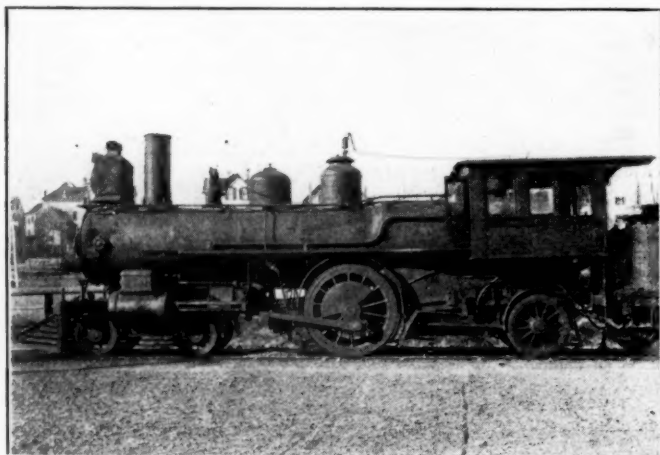
of these dimensions would prove under modern conditions both from an operating and maintenance standpoint. But it will be observed from the dimensions and drawings of the reconstructed locomotive that this locomotive now compares favorably with the more modern Consolidation engines. The work of reconstructing six of these old locomotives was recently completed at the Schenectady works of the American Locomotive Company and the cost to the railroad was less than half of what new locomotives of similar weight and capacity would have cost.

In the execution of this work, it has been the policy of the Boston & Maine to regard one locomotive as a standard to which older locomotives would be made to conform. In

the case of the Consolidation locomotives, those purchased in 1913 and at a later date were regarded as a standard for efficiency to which the locomotives of the same type acquired in 1911 and prior to that date were made to conform. Having decided upon a standard, the locomotives which required the least alteration were first taken in hand. With the Pacific type locomotives and some of the Consolidations, the installation of superheaters alone sufficed to bring these locomotives up to the desired standard. This has involved a regular program of superheater installations for old locomotives which is still actively under way.

Reconstruction of Other Locomotives

But as the work on locomotives most susceptible to improvement is nearing completion, the reconstruction of types that involve considerable changes is under consideration. The most interesting example that can be cited in this connection is the projected reconstruction of 18, Twelve-wheel type freight locomotives into Eight-wheel switchers. A diagram submitted in connection with this article not only shows the character of the reconstruction work involved but indicates an interesting similarity between the proposed Eight-wheel switcher and the standard locomotive of the same type developed under the direction of the Railroad



An Old B. & M. Locomotive with Polygonal Faced Driving Wheels Designed to Increase Adhesion (Now Converted Into Standard Eight-wheel Passenger Locomotive)

Administration. This diagram also illustrates the manner in which the wheel loads have been re-distributed. The principal items entering into the reconstruction of these locomotives will be new frames which will be slightly heavier in section and new cylinders that will be correctly proportioned in accordance with the new design which will take into account the installation of a superheater.

It is anticipated that the new Eight-wheel switcher will prove a very useful and economical locomotive, whereas the old Twelve-wheel locomotives have demonstrated the reverse and have proved very extravagant in maintenance costs.

Another interesting phase of this work is presented by a large number of small Eight-wheel passenger locomotives which from a capacity standpoint are entirely adequate for the branch line service in which they are engaged but are both uneconomical in operation and maintenance. The policy with respect to all of these locomotives having 18 in. by 24 in. cylinders, or larger, is to replace the old crown-bar boilers with new radial stayed boilers somewhat larger in dimensions and equipped with superheaters.

THE NASHVILLE BOARD OF TRANSPORTATION TRUSTEES has adopted resolutions urging the sale of the Tennessee Central Railroad.

Pennsylvania Joint

Reviewing Committee

THE NEW AGREEMENT between the officers of the Pennsylvania Railroad System and representatives of its train service employees, which was described in the *Railway Age* of January 7, page 106, was completed at a meeting in Columbus, Ohio, on January 13, when members of the joint reviewing committee, representing the whole of the railroad system, were chosen. The chairman is R. V. Massey and the vice-chairman H. R. Karns. It was voted to have a new election for these officers every six months so that each office should be held, in turn, by a representative of the management and a representative of the employees. The permanent headquarters of this committee will be at Pittsburgh, Pa., and regular meetings will be held there on the second Thursday of each month.

The names of the members of the joint committee are given below. It will be seen that each of the four regions of the System is represented. On the part of the employees there are nine members, this because the locomotive engineers have three general chairmen on the Pennsylvania System, instead of two as in the case of the other brotherhood; but it is arranged that one of the enginemen shall drop out whenever a vote is taken, thus preserving the equality of voting power, eight on each side. Not less than a two-thirds vote is required to decide any question presented. Each of the employee representatives is a general chairman of the union to which he belongs. The names are as follows:

MANAGEMENT REPRESENTATIVES.

R. V. Massey, Philadelphia, assistant general manager, Eastern region; H. A. Enochs, Philadelphia, superintendent labor and wage bureau, Eastern region; N. W. Smith, Pittsburgh, assistant general manager, Central region; H. K. Brady, Pittsburgh, superintendent labor and wage bureau, Central region; W. M. Wardrop, Grand Rapids, Mich., general superintendent, Michigan division; W. W. Burrell, Chicago, superintendent labor and wage bureau, Northwestern region; W. C. Downing, Indianapolis, general superintendent, Indiana division; E. B. Dithridge, St. Louis, assistant to general manager, Southwestern region.

EMPLOYEE REPRESENTATIVES.

H. R. Karns, Pittsburgh, Brotherhood of Locomotive Engineers; William Park, Sunbury, Pa., Brotherhood of Locomotive Engineers; H. W. Pfennig, Pittsburgh, Brotherhood of Locomotive Engineers; S. C. Cowen, Philadelphia, Order of Railway Conductors; W. T. Saul, Pittsburgh, Order of Railway Conductors; H. E. Core, Philadelphia, Brotherhood of Locomotive Firemen and Enginemen; D. D. Miller, Pittsburgh, Brotherhood of Locomotive Firemen and Enginemen; R. A. Knoff, Pittsburgh, Brotherhood of Railroad Trainmen; C. E. Musser, Philadelphia, Brotherhood of Railroad Trainmen.

Under the plan, as adopted, there will be "Men and Management" meetings once a month on every division; another for every grand division and also one for each of the four general operating regions.

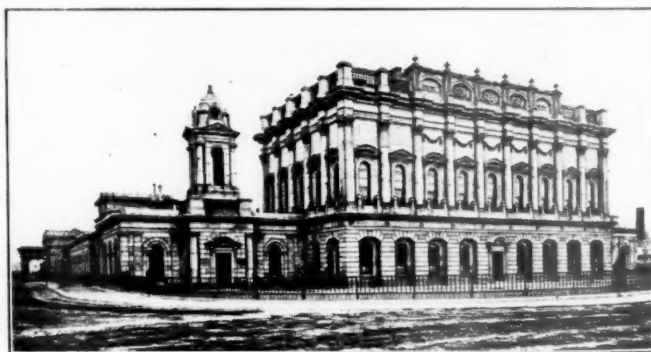
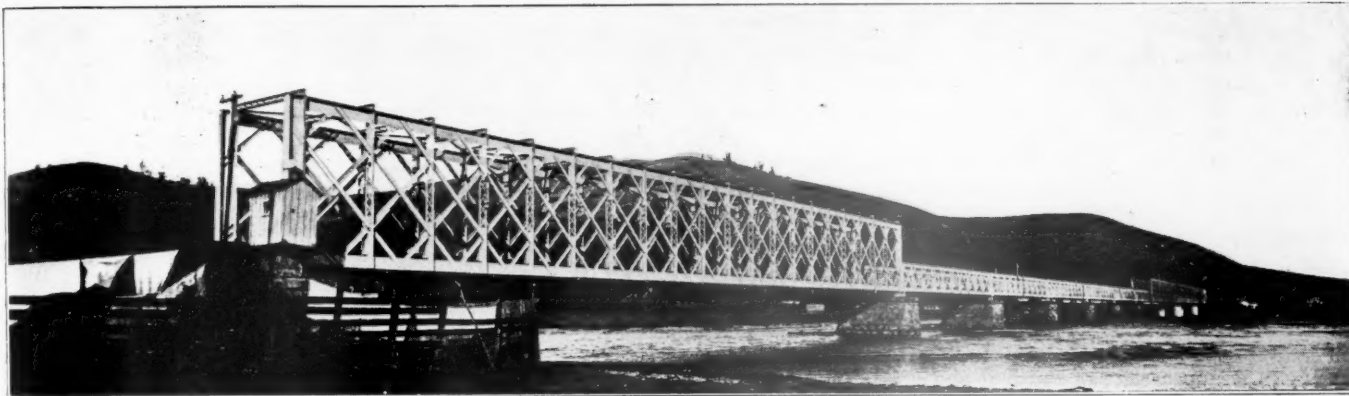


Photo by Keystone View Co.

Kings Bridge Station at Dublin, Ireland, the Scene of Numerous Riots



The Central Sur's Bridge Over Cantin River Near Temuco

The Chilean State Railways an Open Market

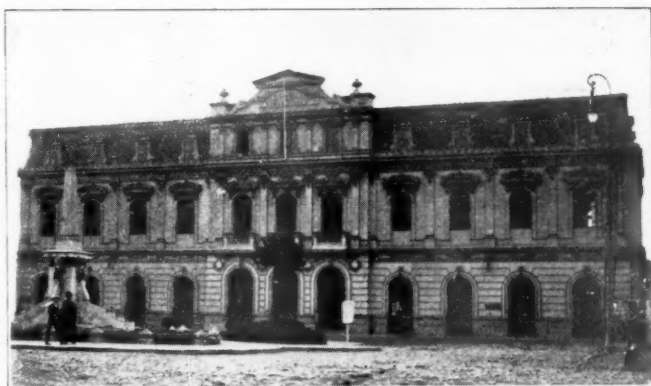
American Supply Exporters Compete on Equal Terms Owing to
Lack of Foreign Domination

Part II

By John P. Risque

IN PART I of the discussion of the Chilean State Railways, which appeared in the *Railway Age* of last week, a general outline of the railway situation in the country was given, together with the opinion of the correspondent concerning the possibilities of the government lines as a market for American railway supplies. The second part of this article is in-

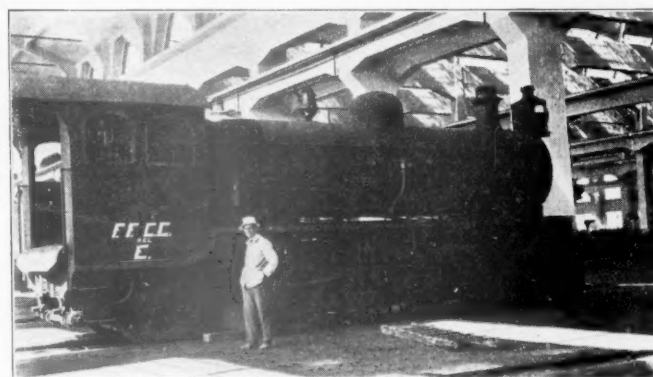
previously pointed out the Longitudinal Norte, in connection with British interests in control of the connecting Nitrate Railways, constitutes what may be called a local zone. These lines are almost wholly engaged in carrying nitrate from inland fields to the several ports on the coast. The Red Central Norte is in the same category, the only difference being that with no nitrate fields to provide it with profitable traffic, it, in comparison with the remunerative activities of the Longitudinal Norte, is nearly starved to death. This brings us to Valparaiso. Looking back over the ground just traversed and considering it for temporary convenience as an uninterrupted system, it is pertinent to point out the existence of another factor which has rendered the northern section of the Chilean government lines almost impotent as far



Bella Vista Station, Valparaiso

tended to give the reader a more complete idea of the size, importance and peculiarities of the Chilean state railways. Reference to the map published with Part I of this article will probably be helpful.

The government railways of Chile can be most easily visualized by dividing them into two sections. The first of these embraces the lines north of the La Calera, Aconagua (near Valparaiso), and the second takes in all the government lines south of La Calera. The northern section is composed of two systems: the Longitudinal Norte which extends from Pintados, Tarapaca, to Pueblo Hundo, Atacama, and the Red Central Norte which extends from Pueblo Hundo to La Calera. The southern section (south of Valparaiso) is known as the Central Sur. The northern section may appear to be an important traffic artery from north to south. In reality, it is nothing of the sort. As has been



A German Compound Ten-Wheeler in the New Shops at San Bernardo

as the long haul is concerned. This factor is the existence of several lines of efficiently run steamships which transact practically all of the local as well as the through business between the numerous ports on the coast as well as the transportation of nitrates to foreign markets.

From a standpoint of military strategy the usefulness of the northern lines, in connection with the lines south of

Valparaiso, would show itself of tremendous value in making possible the relatively quick mobilization of troops along the entire coast line, and it is even claimed that those lines were originally conceived with that sole idea in view.

On the Red Central Norte some very heavy grades are encountered which necessitate the use of rack rail, of which there is about 28 miles in use on grades as heavy as 6 per cent. There are some long tunnels on the route, where the line traverses country that has presented severe obstacles to the builders.

The Central Sur system of the state railways, 744 miles long, is more popularly known as "Chile's main line," because of the density of traffic arising from the concentration of population in the districts of Valparaiso and Santiago, as well as the appearance of the fast and good sized trains that run on its 5 ft. 6 in. track. This system has numerous branches, prominent among which are those running to San Antonio, Talcahuano, Concepcion, Curanilahue, Valdivia, Constitucion and other points and, last but not least, the busy branch from Llai-Llai, on the main line between Valparaiso and Santiago, to Los Andes, where passengers en route to Argentina by way of the celebrated Transandine Railway, spend the night whether they wish to or not. The Central Sur is a very busy line with both passengers and freight, particularly between Valparaiso, Santiago and Concepcion, to which points fast and frequent express trains are run daily over its broad gage track.

Rolling stock on all of the Chilean lines presents a picture that is almost as varied as the scenery. Car characteristics on both narrow and broad gage lines follow our own designs. On the cars of the broad gage lines, in and about Valparaiso and Santiago, can be found the names of American manufacturers. Freight cars seem to hail from everywhere. Some are four-wheel and some eight-wheel styles and they are built of wood, pressed steel, or steel skeletons with wooden linings. Chain and hook couplers are generally used but here and there on some new equipment—and very generally on the wide gage passenger cars—automatic couplers appear. These are indications of the Chilean railroaders' attitude of mind, for they are thinking seriously of standardization and modern methods, and progress along these lines is being made regularly.

Locomotives are of an infinite variety of types and sizes and sufficiently different one from another as to discourage the most ambitious advocate of standardization known. They are of all sizes and makes—French, German, English, American. Chile's collection of motive power is comparable to a permanent international locomotive exposition; but the varied assortment makes good advertising for the manufacturers, because all the engines seem to be running "square." Their appearance, too, is interesting; some have bright red driving wheels and many brass trimmings and others fewer decorations, but all of them are spick and span.

Valparaiso's congested and ancient shops will soon be relieved by the opening of the new and elaborate repair plant at San Bernardo, a suburb within 10 miles of Santiago where it is planned to take care of all the repairs in that section and to manufacture everything possible on the job. The buildings for these shops have been completed and are being rapidly equipped with the American machinery, the deliveries of which were interfered with during the war. The shops are expected to be in operation by the early part of this year. Track conditions along the Longitudinal Norte and the Red Central Norte are fair; on the Central Sur, excellent.

After Uncle Sam's recent experience with government operated railways, almost any American taking the fast run from Valparaiso to Santiago will pause to admire the Chileans' success with state ownership and operation. Evidence of the Chileans' determination to stop at nothing short of bringing their lines to a state as nearly perfect as possible is shown by the railway officers' intense interest in new meth-

ods which vitally affect the welfare of the lines. A general installation of signals is on the program, together with other improvements. In this connection it is worth while mentioning that representatives of the Chilean State Railways have maintained headquarters in the United States for three years and that there are 15 young Chileans engaged in railway work here, and that, furthermore, the Chilean government plans to send 10 men here annually to study our roads.

In the library of the state railway headquarters in Santiago, can be found "estudios," studies of almost every conceivable method of operation, finance and equipment of lines; some are studies of various organizations, some of proposed extensions and new lines, some are histories of certain divisions. In fact, there seems to be, neatly bound and easily available for the investigator, a volume on pretty nearly any subject of importance to efficient railway operation. One of the most interesting and typical of these is "Folleto Num. 3," bearing the mark of the state railways printing plant and dated 1912. It gives the details of the various systems of administrative organizations of railways in use in the principal countries of the world. Another volume of 114 pages sets forth in in-



Las Palmas Tunnel, Near Valparaiso, on the Valparaiso-Santiago Line

teresting detail the details of planning, surveying, constructing, and equipping the Arica-LaPaz Railway. The work is illustrated by photographs and outline drawings of locomotives, stations and shops along the line. Still another volume deals with the intricacies of car lighting equipments.

Reference to the subject of nitrate, Chile's thermometer of financial temperature, is timely here. On June 1, 1920, encouraging reports from Santiago stated that the Nitrate Producers' Association had made it known officially that the total tonnage of that commodity exported for the year had reached 95,000 tons, as compared to 55,000 tons the preceding year, and added that the prosperity of that industry means a solid financial situation for the government, an abundance of work and the increased welfare of the community.

It will probably be remembered that in 1919 the government of Chile sent a commission to the United States to seek a loan of about \$30,000,000 with which it proposed to make additions to its railway equipment, but that the commission, empowered to negotiate at 5 per cent, made no progress when it was found impossible to float the loan at less than 6 per cent. When Chile finally succeeds in obtaining the much needed funds—and the improved nitrate situation encourages hope in that direction—the long delayed plans of her railway administration will take definite shape.

The third and concluding part of the discussion of the railways of Chile will appear in an early issue of the *Railway Age*.

How "National Agreements" Cause Huge Wastes

Multitude of Examples Cited Before Labor Board Show
How Employees Get Millions for Work Not Done

THAT THE RAILROADS of the country are fighting for the right to operate their properties economically and efficiently in accord with the specific requirement of the Transportation Act and demand of the public has been brought out during the past week in the hearings before the Railroad Labor Board at Chicago on the demand of the various railway brotherhoods for continuation of the National Agreements adopted under government control and standardizing the working conditions of railway employees throughout the country.

The carriers, represented by E. T. Whiter, chairman of the Conference Committee of Managers of the Association of Railway Executives, are opposing the continuation of these National Agreements solely on the ground that the most economical and efficient operation is impossible so long as they exist. Mr. Whiter has emphasized several times during the presentation of his testimony that a fight is not being made upon agreements between railroads and their employees but upon agreements which are national in scope and therefore do not and cannot allow for widely varying local conditions which make their strict and uniform interpretation and application often produce results which are outrageous or ludicrous. They result in a great many cases, in seriously impairing the efficiency of working forces and in causing large amounts of money to be paid to employees for work which is not done.

Mr. Whiter's presentation on behalf of the carriers has thus far dealt exclusively with the carriers' objections to the agreement with the railway shop crafts, the reasons for their opposition, and the manner in which the application of each rule operates to impair efficiency and destroy economy. The bearing this case has on (1) the transportation rates and (2) the relations between employers and employees in other industries has, therefore, not been emphasized. However, as the real issues in the fight are being brought to light, there are indications that business men are beginning to see the probable indirect effect on their own fields of the application of these agreements in the railroad field. For instance, if all employers were forced to pay their employees a bonus of one hour's pay each week for checking in and out on their own time, as the shop crafts agreement forces the railroads to, the economy of operation of every industry would be impaired. Furthermore, under the terms of the Transportation Act the public is required to pay rates sufficiently high to cover operating expenses and allow a fair return on the value of the carrier's property. This means that the public must pay for the unnecessary expense caused by these national rules.

The ridiculous and outrageous results the application of the National Agreements is constantly causing have been illustrated by Mr. Whiter by a multitude of specific examples, some of which were given last week and others of which are the following:

One of the rules in the shop crafts agreement requires that when employees are called or required to return to work, they will be allowed 5 hours' pay for 3 hours and 20 minutes' service or less. The Norfolk & Western carefully figured the actual cost of the punitive payments made under this rule on its line and found that in the first eight months of 1920 they totaled \$42,142.44. During this period the company made 22,758 "calls" (requests for additional work) upon its shop employees. In response to these "calls" the employees worked 49,718.9 hours and were paid for 113,756 hours of service. A further check disclosed that 94.5 per cent of these

"calls" were merely continuous service; the requirement to finish tasks already begun and which it was in accord with efficient and economical practice to continue to completion.

A machinist who had been employed by the Baltimore & Ohio was taken out of service after a medical examination had revealed the fact that the employee was afflicted with a communicable disease. The organization of which he was a member contended that his dismissal was in violation of one of the rules of the National Agreement, and after some controversy the road was forced to pay the employee \$1,155.30 regardless of the fact that the employee was in the meantime employed in outside industries, earning in one position alone, \$532.20.

The Chicago & Eastern Illinois discharged a locomotive inspector for failure to report defects in accordance with the Interstate Commerce Commission's rules and instructions. A controversy ensued, the employees maintaining that one of the rules of the National Agreement had been violated in discharging the inspector. As a result of this controversy it was ruled that he should be reinstated and paid for time lost. The Chicago & Eastern Illinois was forced to pay him \$1,612.31, although it was known that the man was working for a coal company while out of the employ of the railway.

Another of the rules of the shop crafts agreement provides that when employees are required to check in and out on their own time they shall be paid one hour extra at the close of each week regardless of the number of hours worked during the week. The application of this rule during the first six months of 1920 cost the railroads \$6,445,658.73. This total includes the hourly rate increases provided by the Board's recent wage award for but two months, May and June. Therefore, the total would be increased during future periods to the extent of the increases awarded shop employees for four of the six months. This would make the total annual cost to the railroads of this one rule more than \$14,500,000.

The Michigan Central is now faced with a claim involving nearly \$2,000.00 in pay for a carman's helper who had been straightening bolts. The brotherhood claimed that the man was entitled to a blacksmith's rating and pay because he had been doing work which is listed in the National Agreement as blacksmith's work. If the brotherhood's contention is carried, it will mean that reclamation of work of this character will have to be discontinued because the cost would be prohibitive.

Traffic demands on the Long Island require the operation of certain sub-stations 16 to 18 hours of the 24, commencing at 5:30 a. m. Prior to the execution of the shop crafts agreement the first shift at these sub-stations started work at various times between 5:30 a. m. and 7:00 a. m. and each shift worked eight continuous hours, or longer if required, time and one-half being allowed for more than eight hours work. Under present conditions the men must be paid a minimum of five hours' pay for 3 hours and 20 minutes' work or less in advance of 7:00 a. m. As a result the Long Island is paying \$4.25 per man to operate each sub-station one-half hour from 6:30 a. m. to 7:00 a. m.

On the Midland Valley after December 26, 1918, three coach repair men, the first man working from 6:00 a. m. to 2:00 p. m.; the second working from 2:00 p. m. to 10:00 p. m., and the third working from 10:00 p. m. to 6:00 a. m., were employed by the road at one of its terminals. Under the terms of the National Agreement the road was later required to pay each of these employees five hours' pay for

the work each performed in advance of the starting time provided by the agreement, notwithstanding the fact that only eight hours of actual service was required of each shift. In other words, because the starting time of each of the shifts was one hour in advance of the starting time set by the agreement it was necessary for the road to pay each employee 13 hours' pay for but eight hours of actual service.

A mechanic employed by the Cincinnati, Indianapolis & Western was recently required to make a trip to an outside terminal. The train arrived there at 2:10 p. m. and his actual work required about one hour. The man was relieved before 4:00 p. m. However, it was necessary for him to remain at the terminal all night as there was no returning train until 5:00 a. m. the following morning. After sleeping all night and upon his return to his home station he requested the payment of \$34.84 for the one hour of actual work in accordance with the rules of the National Agreement.

At the close of a regular working day of eight hours, the testing of an engine on the Chicago, St. Paul, Minneapolis & Omaha, was not completed. This work would have been completed in the following hour but a leak developed which necessitated some additional work, and consequently the task was not completed until 30 minutes past the ninth hour. Under the provisions of the National Agreement this resulted in paying six men five hours' pay each for one-half hour's work.

On the same road it became necessary to send a sheet metal worker from Hudson, Minn., to Minneapolis to repair some water tanks. In order to reach Minneapolis early enough to make these repairs he left Hudson at 6:30 a. m. The regular starting time for this employee under the terms of the National Agreement is 7:00 a. m. Consequently he submitted a claim for five hours' pay for the 30 minutes from 6:30 a. m. to 7:00 a. m., a large part of which was spent on the train.

The Cincinnati, Indianapolis & Western recently reported that on two different occasions employees have been called for work outside of their regular hours and the call cancelled before they left home. Acting in accordance with an interpretation of the shop crafts agreement these employees requested the payment of five hours' pay for being called.

The Atchison, Topeka & Santa Fe in June conducted a test in its shops at Shopton, Iowa, and found that there were 34 cases where employees worked over the ninth consecutive hour to complete necessary work to put engines in service. The actual time worked in all 34 cases was 46.2 hours, and for this work the men were paid for 170 hours, making a punitive payment for 123.8 hours. The same road has reported that there have been many cases where, on account of a second shift man not reporting for work, a first shift man has been requested to continue work in the former's place. One man who performed such work on the second shift recently claimed five hours' pay for each job performed during the second shift. This would mean that the employee would be paid, in addition to his regular hourly pay, for 20 hours of work for being requested to perform four different tasks in the second shift.

At Strong City, Kansas, a Santa Fe train left at an hour that necessitated having a carman start his work at 6:45 a. m., or 15 minutes in advance of the time for the remainder of the carmen to commence their day. Under the terms of the National Agreement the road was compelled to pay five hours' pay per day for this 15 minutes of service, or \$90.50 for a total of 7½ hours' work per month. It was impossible to effect any other arrangement without placing an entire night force in service and it was therefore necessary to change the departing time of this train.

The Norfolk & Western recently had a case where a machinist, whose regular reporting time was 7:00 a. m., was at the shop 15 minutes early. An engine which was ready to leave the terminal, had a broken water glass. The machinist

was requested to apply a new water glass, and for this 15 minutes of initial overtime the company was required to pay for 5 hours' work.

One of the rules of the shop crafts agreement provides that when employees are changed from one shift to another they will be paid overtime rates for the first shift of each change. This rule, according to the Atchison, Topeka & Santa Fe, cost, in September, 1920, on the western district of its eastern lines alone, \$593.98, for which no service of any kind was received. As a matter of fact, the changing of employees from one shift to another in the exercise of their seniority rights caused a reduction in efficiency and lowered production.

A car repairer employed by the Norfolk & Western recently requested a transfer from the third shift to the first shift. The railroad contended that the transfer being made upon the employee's request he was not entitled to the overtime allowed by the National Agreement. This contention was overruled and it was necessary to pay this employee time and one-half for the entire first day of the new shift.

A steel car repairer in the freight car department of the Atlantic Coast Line at Waycross, Ga., received in that capacity 67 cents per hour. Having had some previous experience in repairing steel passenger cars and locomotive tender frames he had been called from time to time to assist in this work when the regularly assigned passenger repair men were unable to keep up with the requirements of the work. When so called this repairer had been paid at the rate of 72 cents per hour for each hour that he worked on steel passenger cars or locomotive tender frames. The brotherhood of which he is a member contended that under the National Agreement, he was entitled to the permanent rate of 72 cents per hour regardless of the particular class of work upon which he is engaged. The railroad contended that the employee had been paid the rate applicable to each class of work for the actual number of hours of service rendered, and that he had therefore been adequately compensated for his services. Although it was pointed out that the assistance of this man in working on passenger equipment and locomotive tender frames was required only in emergency cases, it was ruled that he should, according to the rules of the National Agreement, be paid the higher rate continuously because of the emergency work which he had performed.

The Chicago Great Western, because of a train delay recently, was not able to distribute its pay checks until 20 minutes after the ending of the first shift at one of its shops. The employees who were forced to wait the 20 minutes for their pay checks requested, under certain rules in the National Agreement, overtime for all of the time detained after the completion of their regular assignments.

A boilermaker employed by the St. Louis-San Francisco left the service of that road on October 31, 1919. He did not receive his pay check until November 7 because of poor mail service. Acting under one of the provisions of the shop crafts agreement, he demanded and was awarded pay for six out of the eight days after he quit work that elapsed before he received his check.

One of the rules of the shop crafts agreement provides that "should an employee be assigned temporarily to fill the place of a foreman he will be paid his own rate, straight time for straight time hours and overtime for overtime hours, if greater than the foreman's rate." A later interpretation of this rule provides that when employees are temporarily filling a foreman's position they will work the same number of hours as the foreman whose place they are filling is required to work and will be paid for overtime accordingly. The Atchison, Topeka & Santa Fe requested a machinist to take the place of a foreman who was off duty on account of sickness for 77 days. The regular foreman's salary was \$265 a month and during the 77 days in question he would have earned \$664.53. The amount paid the machinist's substitute at his

hourly rates during this period was \$921.30, an increase of \$256.77 over the foreman's regular rate for a period of 77 days.

Under this same interpretation it was necessary for the Michigan Central to pay one of its machinists, whose regular tour of duty is from 8:00 a. m. to 4:00 p. m., and who was temporarily to relieve a foreman whose regular tour of duty was from 7:00 a. m. to 6:00 p. m., five hours for the work he performed in filling the foreman's place between 7:00 a. m. and 8:00 a. m., the machinist's regular rate of 72 cents per hour for the time worked from 8:00 a. m. to 4:00 p. m., time and one-half for the hour between 4:00 p. m. and 5:00 p. m., and five hours for the hour between 5:00 p. m. and 6:00 p. m. In other words, the mechanic was paid 19½ hours for 11 hours of service and his daily earnings averaged about \$5 per day more than the average daily earnings of the man whose place he was filling regardless of the fact that he could not, because of lack of experience, fill the position with the same degree of efficiency as the regular foreman.

So far all of these examples of the manner in which the National Agreements work out in actual practice have dealt with their interference with operating economy. It is also true that other of the rules operate to seriously interfere with the efficiency of working forces. For example the following cases have been reported:

The Norfolk & Western recently advertised a stoker repair job which was requested by a machinist who had been operating a lathe for a number of years but who knew nothing of stoker repair work. He was assigned to the new work, continuing until he had become fairly efficient. Soon after he returned to lathe work when a vacancy occurred. In the meantime the railroad suffered by not receiving the amount of work that it rightfully expected from a capable stoker repair man and an efficient lathe man.

The Virginian Railway discharged a car repairer in February, 1919. When his turn came to be reemployed in accord with his seniority, the company refused to reinstate him on the ground that he was afflicted with very poor eyesight and was therefore in constant danger in the shops. The man's brotherhood took up his case and obtained a ruling under one of the clauses of the shop crafts agreement that, inasmuch as he was not advised at the time of his discharge that his eyesight was defective, he should be reemployed and paid not only for the time lost from the date his seniority would have required his reemployment, but for all of the overtime his shift had worked during this period. The total payment that had to be made under this interpretation for work not done was over \$1,000.

It recently became necessary for the Cincinnati, Indianapolis & Western to reduce forces about 35 per cent because of a decline in business. The employees were informed of this necessity and their shop committee suggested that half of the men be worked for three days and the other half the remaining three days of each week in order that all might be employed and earn enough to live. When the general officers of the brotherhood were informed of this plan it was immediately rejected and the company was forced to make a 35 per cent reduction in the shop force regardless of the fact that they could have reached an agreement with their own men which would have reacted to the men's benefit.

An engine on the El Paso & Southwestern was ready to go to its train recently when it was discovered that a window light was broken in the engine cab. The locomotive engineer insisted that it be replaced. There was no engine carpenter on duty at that time and it was therefore necessary for the foreman to call one, although he could have performed the work in a few minutes. The result was that the train was delayed for one hour and 30 minutes and the employee called

to do the work was paid for five hours time, although the work took only 30 minutes.

At an outlying point on the Buffalo, Rochester & Pittsburgh four inspectors and one foreman are employed. Prior to the execution of the National Agreement the foreman also inspected cars in conjunction with his supervisory duties. Since then this man cannot do any car inspecting himself but must devote his entire day to supervising the work of the other four men; an extravagant, unnecessary and unbusinesslike arrangement.

Section men employed by the Bangor & Aroostook removed some damaged parts of a section motor car and applied them after they had been welded in the company's shop. This led to a dispute and it was ruled that this had been done in violation of the National Agreement and should not be done again even though these cars are scattered all over the road's lines.

Another of the rules in the shop crafts agreement provides that employees serving on shop committees shall be paid for time spent in conferences with company officers. The Atchison, Topeka & Santa Fe was recently requested by a shop committee to conduct an investigation regarding trouble between a car foreman and a car repairer. This investigation extended one hour and 22 minutes beyond the regular tour of duty of one of the committeemen and he accordingly made claim for and was paid six hours and 30 minutes' pay for the extra one hour and 22 minutes which this investigation had taken.

The Chicago, St. Paul, Minneapolis & Omaha recently scrapped an engine at its St. Paul shop. Skilled mechanics were used for the entire work in accord with the provisions of the National Agreement. Machinist helpers and laborers could have performed this work as satisfactorily as mechanics and effected a saving of at least one-third in the cost of labor, in addition to releasing skilled mechanics for more essential service.

As a result of the strict interpretation of one of the rules in the shop crafts agreement the Pere Marquette was recently compelled to pay a total of \$9,363.94 in back pay to four employees because their titles were changed although their work had remained the same.

As stated before, the carriers' fight is against the continuation of National Agreements, and not against agreements between the managers and employees on individual railroads. These examples taken from Mr. Whiter's testimony show the impracticability of economically applying national rules to working conditions of railway employees regardless of the varying conditions under which these employees work.

The testimony presented to the Board from the opening of these hearings on January 10 to January 12, was reported in the *Railway Age* of January 14 (page 199). Subsequently, Mr. Whiter continued the presentation of a mass of evidence and specific cases to show that economical and efficient operation are impossible as long as the Shop Crafts Agreement is continued in effect. Mr. Whiter's testimony regarding this agreement was completed on January 18, following which representatives of several of the larger carriers presented detailed statistics to show that the abolition of the piece work system of pay in railroad shops has resulted in serious decreases in the efficiency of the individual worker and consequently in the output of the shops. A more complete report of this testimony will be included in the next issue of the *Railway Age*.

So far there has been little discussion during any of the Board's hearings. Mr. Whiter has been permitted, by both the brotherhood's representatives and the members of the Board, to continue his testimony without interruption. The character of the evidence and specific cases placed before the Board is shown in the preceding examples which are based entirely upon the testimony already submitted.

Freight Car Loading

WASHINGTON, D. C.

THE NUMBER OF CARS loaded with revenue freight during the week ended January 8 was 706,413, as compared with 830,673 in the corresponding week of 1920, 723,801 in 1919 and 696,907 in 1918. While the total was greater than for either of the two preceding weeks, which included the Christmas and New Year holidays, it was about 90,000 cars less than for the week ending December 18. The summary as compiled by the Car Service Division of the American Railway Association follows:

REVENUE FREIGHT LOADED AND RECEIVED FROM CONNECTIONS

Summary—All Districts, Comparison of Totals This Year, Last Year, Two Years Ago, for Week Ended Saturday, January 8, 1921

Districts	Year	Grain and grain products	Live stock	Coal	Coke	Forest products	Ore	Misc. L. C. L.	Miscellaneous	Total revenue freight loaded			Received from connections		
										This year 1921	Corresponding year 1920	Corresponding year 1919	This year 1921	Corresponding year 1920	Corresponding year 1919
Eastern	1921	5,191	4,044	47,452	1,460	6,925	1,888	40,349	54,435	161,744	204,956	169,730	193,916	222,402	185,889
	1920	6,284	4,312	54,335	3,639	8,246	1,053	32,168	94,919	176,119	169,779	158,735	101,459	115,185	130,018
Allegheny	1921	2,321	3,900	57,090	6,745	3,505	3,332	31,530	45,428	153,851	169,779	158,735	101,459	115,185	130,018
	1920	2,709	3,785	56,063	3,929	4,234	1,763	38,426	58,870	153,851	169,779	158,735	101,459	115,185	130,018
Poconos	1921	156	142	23,436	398	1,282	63	2,242	5,046	32,765	35,934	29,449	13,095	17,593	15,430
	1920	211	164	22,633	649	2,029	329	130	9,789	32,765	35,934	29,449	13,095	17,593	15,430
Southern	1921	3,036	2,056	26,997	794	11,958	1,967	32,405	25,770	104,983	120,372	103,207	53,825	71,078	57,085
	1920	3,250	2,919	25,895	202	16,314	2,210	17,619	51,963	104,983	120,372	103,207	53,825	71,078	57,085
Northwestern	1921	11,660	9,215	6,226	1,237	10,597	1,141	22,010	24,268	86,354	116,729	104,549	41,855	55,127	62,673
	1920	13,450	10,687	15,523	1,057	16,031	1,739	18,471	39,771	86,354	116,729	104,549	41,855	55,127	62,673
Central Western	1921	12,648	10,312	23,522	301	2,677	1,863	25,902	31,787	109,012	121,984	107,969	45,729	63,129	52,371
	1920	10,783	12,927	25,692	409	5,380	2,559	21,599	42,635	109,012	121,984	107,969	45,729	63,129	52,371
Southwestern	1921	4,678	1,825	5,561	544	6,038	463	14,655	23,940	57,704	69,919	50,162	42,938	52,345	39,799
	1920	4,168	2,592	9,197	514	6,331	599	13,593	23,925	57,704	69,919	50,162	42,938	52,345	39,799
Total all roads	1921	39,690	31,494	190,284	11,479	42,982	10,717	169,093	210,674	706,413	830,673	692,817	492,817	596,859	543,265
	1920	40,855	37,386	209,338	10,399	58,565	10,252	142,006	321,872	706,413	830,673	692,817	492,817	596,859	543,265
	1919	41,641	46,091	193,744	1,030	45,270	11,693	169,093	85,362	706,413	830,673	692,817	492,817	596,859	543,265
Increase compared...	1920	1,165	5,892	19,054	11,479	15,583	465	27,087	111,198	124,260	104,042	104,042	104,042	104,042	104,042
Decrease compared...	1919	1,951	14,597	3,460	2,288	976	976	174,688	17,388	17,388	17,388	17,388	17,388	17,388	17,388

L. C. L. merchandise loading figures for 1921 and 1920 are not comparable as some roads are not able to separate their L. C. L. freight and miscellaneous of 1920. Add merchandise and miscellaneous columns to get a fair comparison.

January 1	30,098	23,950	170,224	10,550	32,635	8,340	144,657	178,451	598,905	745,446	612,741	453,537	591,437	525,055
December 25	29,147	19,814	177,308	10,956	39,314	9,497	158,918	194,321	639,275	684,784	549,975	514,363	588,644	562,602
December 18	35,505	30,470	223,153	12,750	48,626	14,127	186,997	245,230	796,858	806,734	796,116	587,099	576,770	672,533
December 11	36,820	31,799	230,396	13,904	51,194	17,673	193,143	239,869	834,897	761,940	820,202	614,178	596,785	683,649

The freight car surplus for the week ending January 8 had increased to 258,678 cars, of which 171,214 were box cars and 38,722 were coal cars. The shortages reported amounted to only 1,929 cars.

The percentage of freight cars on their home lines, which was so reduced by the pooling of the cars during federal control, has been restored to nearly a normal condition since the business depression has relieved the demand for cars. On January 1, 45.2 per cent of the cars were at home, as compared with only 21.9 per cent on February 29, 1920, when the roads were returned. When the roads were taken over on January 1, 1918, about 44 per cent of the cars were on home lines. On May 1, 1917, the percentage was 52.8.

Summary of General Conditions

The Car Service Division has issued the following summary of general conditions as of January 12:

Box Cars.—Reports show that requirements for box cars are being satisfactorily protected. To stimulate continued progress in the return of cars to home roads, it is important that all concerned co-operate to the fullest possible degree in facilitating the return of cars to owners in anticipation of heavier demands later on.

Auto Cars.—Demand for auto cars is being fully met. Cars in excess of requirements should be disposed of in accordance with Car Service Rules. Where loading is available, cars should be forwarded into auto-manufacturing territory in preference, precaution being exercised to avoid loading with cement, flour and other commodities leaving a residue which will damage the finish of autos.

Stock Cars.—Practically all requirements for stock cars are being filled.

Refrigerator Cars.—Orders for refrigerator cars are being filled currently in all sections. It is anticipated, however, that the demand for refrigerators will be somewhat more active at an early date, making it expedient that cars be handled with despatch. Permission has been given temporarily to load refrigerators with dry freight in direction of the empty movement.

Open Top Cars.—The end of the first 15-day period of the new year finds the railroads, with some few isolated exceptions, distributing a full supply of open top cars to all commodities requiring this class of equipment. In fact a virtual surplus exists and a few of the large coal loading lines

are experiencing difficulty in currently absorbing the return movement of empties. The production of bituminous coal is being fully protected so far as car supply is concerned; the limiting factor at this time is a rapidly softening coal market with a relatively reduced demand for transportation facilities. This may be considered an opportune time for an active drive to relocate open cars on the principle of ownership. Some instances of refusals to accept cars in accordance with Car Service Rules have been brought to our attention. Without the unqualified co-operation of all lines in strict observance of the Car Service Rules as they now exist, we cannot hope to make reasonable progress in getting cars back to the home roads. It is manifestly necessary that cars be kept moving without restrictive measures that might militate against the attainment of the desired objective.

Flat Cars.—The demand for this particular type of equipment at this time would indicate that the carriers have sufficient supply generally to protect their requirements.

Seven Embargo Districts

The Car Service Division has issued a circular announcing a reduction in the number of embargo districts from 10 to 7 and a re-grouping of the roads in the districts. The new district headquarters will be at Atlanta, Ga., Boston, Mass., Chicago, Ill., Fort Worth, Texas, Montreal, Que., Philadelphia, Pa., and Winnipeg, Man.

A considerable reduction in force was made by the Car Service Division on January 1. D. E. Spangler, who has been in charge of open-top car distribution, has returned to the Norfolk & Western as general superintendent of transportation.

Railway Water Treatment Pays Large Returns

Results Obtained on Rock Island Point to Advantage of Investment in Softening Plants

By Paul M. LaBach

Engineer of Water Service, Chicago, Rock Island & Pacific, Chicago

THE ROCK ISLAND SYSTEM serves a territory of which the outlying points are Chicago; Memphis, Tenn.; Fort Worth, Tex.; Santa Rosa, N. M.; Denver, Colo., and Minneapolis, Minn. On its lines there are 412 water stations, or one about every 20 miles. The spacing of these stations is not dependent upon whether they are convenient places to get water, but upon the needs of the locomotives.

The best water supplies are found in Minnesota, Missouri, Arkansas and Louisiana. But even in these states, if wells are resorted to they will frequently give hard water. In addition the surface water usually carries silt for part of

steam except where the exhaust can be utilized for heating or other purposes.

Chemical analyses are made at intervals of all water used by locomotives. Before any prospective supply is used an analysis is first made. A tabulation of these analyses shows that out of 412 sources of supply, 290 furnish water of over 10 grains hardness per gallon. Of the 117 stations which take water from streams, all may be said to carry large quantities of silt part of the year and a number practically all of the year.

Started in 1904

In 1904 the executive officers became interested in the softening of water by the Porter-Clark process. The first plants built were of the gravity-flow intermittent type. These were followed by the repumping intermittent variety and finally by the continuous type of steel construction. Since its introduction, the continuous type has been used in the majority of cases except where special circumstances have favored the gravity intermittent type. The lack of available funds for this, as well as other construction work, in the last 10 years has prevented any large program being carried out, the policy generally being to pick out the isolated points where the money returns were the greatest at the time. These comparisons were made by multiplying the number of thousands of gallons of water used by the number of pounds incrustants removable per 1,000 gal.

At the present time this has resulted in plants scattered pretty generally over the system and a change in policy has consequently been adopted, the aim being to fill in the "blank" points and thus secure engine districts on which all the water requiring it will be treated. Another point of view has also entered into the subject, that is, the clarifying of water. Muddy water does more damage than is ordinarily appreciated. As mud is readily removed in a softener, the muddy water territories with hard water are to be handled with reference to both the suspended and dissolved solids.

With this object in mind the worst bad water territories (quantity and quality both being considered) naturally divide themselves into two areas, which are somewhat different in character, but of equal importance from an operating point of view. The first of these is on the line extending from Chicago to Valley Junction, Iowa; from Davenport, Iowa, to Trenton, Mo. (between Princeton and Wabash Crossing), and from Bureau, Ill., to Peoria. This is heavy traffic territory in which delays due to locomotive boiler troubles would be of prime importance. As explained in a previous paragraph the water is hard and, in wet weather, the streams carry a large amount of mud.

The second territory referred to extends from Kansas City to Santa Rosa, N. M.; from Herington, Kan., to Fort Worth, Tex., and from Shawnee, Okla., to Sayre. This district is different in character from the first. The water carries somewhat greater quantities of incrustants, but muddy streams are fewer in number. In addition to this the water towards the southwest is higher in the sulphates of lime and magnesia and various alkali salts are present. The result of this is that corrosion and pitting are found. It has been



Water Softening Plant at Armourdale, Kan.

the year at least. In Illinois, Iowa, Nebraska and Kansas the water is either muddy or hard, usually both. In the southwest it is scarce and contains another class of impurities which are known by the general term, "alkali."

In the development of water in this large area many methods have been followed. The easiest is to buy of a municipality, and this is done at 25 per cent of the stations. The balance is handled by company forces. About 50 per cent of the water comes from open or tubular wells, 25 per cent from streams, 10 per cent from impounding reservoirs and the balance from lakes, springs, etc. From these various sources over eight billion gallons are pumped by company forces per year and over one billion gallons are purchased from others. The methods of pumping the water are as varied as the sources of supply. Steam, internal combustion engines, electricity and gravity stations are found. However, the policy of late has been to use other power than

generally known for some years that this trouble is due to electrolytic action and in this case is superinduced by the large amount of sulphates in the water. It is thought that the best method of remedying this will be to have all water in these districts under chemical control. This will give an opportunity to work out such methods as scientific investigation may make available from time to time.

Results Obtained

In one year the total amount of water given complete treatment was 1,642,510,000 gal., and the amount given partial treatment with soda ash was 311,460,000 gal.

Computations based on the A. R. E. A. formula of 10 cents saved through the removal of each pound of incrusting solids give the total of \$358,552 saved per year, not including interest, repairs or depreciation of plant. The total cost of plants was \$305,587. This gives a gross operating saving of 117 per cent. If the interest on the cost of plant is 6 per cent this will be reduced to 111 per cent. Depreciation and repairs will subtract another 8 per cent and thus leave the net profit at 103 per cent on invested capital. In this computation no credit has been taken for mud removed, although a large quantity has been taken out at many of these points. The saving due to the elimination of mud must be estimated in each particular case. No formula of general applicability has been devised.

In this accomplishment two elements have entered into the result, namely, supervision and design. The two operating districts of the Rock Island each have a supervisor of chemical tests and a supervisor of water stations, in addition to the division forces, whose duties require them to follow the daily operations of each station. By the follow-up methods installed, satisfactory treatment is secured with all the different types of plants when operated properly. When in good working order the question of operating capacity is the principal element of difficulty. The capacity varies even with apparatus of the same design and any crowding or hurrying the process produces much harm. The "intermittent" and "soda ash" apparatus is home made. With a few exceptions the tubs are wooden. The "continuous type" machines are of the general type made by the patentees at the time of installation, with such variations as were thought to best suit local conditions.

Softener Installations

Among the continuous type machines there are several different varieties. At Burr Oak the water is treated and stored in one tank.

The tank is 50 ft. in diameter by 50 ft. high, with a 12-ft. downtake and has a rated capacity of 50,000 gal. per hr. Some changes have been made since its installation which

softeners. In order to conserve labor they are all installed adjacent to the pumping plants so that the pumper can operate and care for them. At three of the stations, owing to the extreme distance from the pumping plants to the storage tanks, it was found necessary to repump the treated water. These plants are all of the type K-Graver construction with a quartz filter in the top and double agitators in the downtake. One pump forces the water into the softener and another of the same capacity takes the water after it is filtered and sends it through the long pipe line to the storage tank. One of the photographs shows the treating plant at



Water Treating Plant at Geneseo, Ill.

Geneseo, Ill., where a pipe line two miles long is required. This plant has a rated capacity of 15,000 gal. per hour.

The most recent type is shown in photograph of the softener at Armourdale, Kan., the engine terminal at Kansas City. It was built in two steel standpipes which had been erected some years before, the machinery in Graver Type K. The treating tank at the left has a downtake with a set of double agitators driven by a water wheel. This is the only machinery on top, the balance being on the ground. When the water rises to the top of the softener, it is carried down

SUMMARY OF RESULTS OF WATER TREATMENT ON THE ENTIRE SYSTEM

	Cost of plants	Total M. gal. treated	Cost chemicals	Labor and supervision	Total	Incrustants lb. removed	Saving at 10c. a lb.	Net saving
First District	\$180,203	803,600	\$22,530	\$6,933	\$29,472	1,577,660	\$157,766	\$128,294
Second District	125,384	1,150,370	not given	not given	67,986	2,982,540	298,245	230,258
System	305,587	1,953,970			97,458	4,560,110	456,011	358,552

Net saving equivalent to 111 per cent on investment.

have added to the amount of agitation, both for chemicals and mixing with raw water. A water wheel drives the agitators in the downtake. An electric motor drives the chemical mixers and pumps on the ground level. The control apparatus is of the Booth make.

With this machine hardness has been reduced from 21 to 4 gr. per gal. and averages 5. The cost is much lower than some others due both to the design and a favorable market, the plant having cost \$17,205 while the gross saving per annum is \$24,021.

On the Illinois division there are four continuous type

again by a 12-in. pipe to the bottom and across to the storage tank. The outlets in the latter are at an elevation of 22 ft. By this means the water is given 2½ hours more time to settle after leaving the softener. The apparatus has no filter.

PASSENGER TRAIN PERFORMANCE, as reported by the Pennsylvania for the first ten months since the termination of Federal control, shows an increased percentage of trains on time from 77.4 per cent in March to 82.5 per cent in December. The number of trains making schedule time increased from 87.8 per cent in March to 92.3 per cent in December.

Railroad Brief Advocates Partial Payments of Guaranty

WASHINGTON, D. C.

A BRIEF HAS BEEN FILED by counsel for the Association of Railway Executives and for the Grand Trunk Western in the court of appeals, District of Columbia, in connection with the appeal from the decision of the Supreme Court of the District of Columbia denying a writ of mandamus to compel the Secretary of the Treasury to honor a certificate of the Interstate Commerce Commission in favor of the Grand Trunk Western for \$500,000 as a partial payment on account of its guaranty for the six months following the termination of federal control. This is a test case which involves nearly \$400,000,000 due the railroads of the country.

Answering a rule to show cause why the writ should not issue, the brief says the secretary did not deny any of the allegations of the petition, but made two points in defense:

1. The secretary contended that paragraph (g) of section 209 of the Transportation Act, 1920, contemplated and authorized only one payment in the case of each carrier, such payment to be made only after the Interstate Commerce Commission had ascertained the entire amount due; that he was not required to pay the amount stated in the certificate of the commission in the case at bar, because of the qualification in paragraph three thereof reserving to the commission the right to certify "additional amounts found due to said Grand Trunk Western Railway Company to make good to said carrier the guaranty of section 209 of the Transportation Act of 1920." As an aid to his construction, the secretary called attention to paragraph (h) of section 209 of the act, providing for advances during the guaranty period of such sums, not in excess of the estimated amount necessary to make good the guaranty, as were necessary to enable the carrier to meet its fixed charges and operating expenses, and providing that the United States receive security against the contingency of such advances being in excess of the amount of the guaranty as finally determined by the commission.

2. As a further defense the secretary quoted several sections of the revised statutes and of general legislation relating to the powers and duties of the secretary, treasurer, comptroller of the Treasury, and auditors, and stated that the comptroller had rendered a decision against the payment of the certificate and that the auditor for the State and other departments had made a certificate "finding the sum of \$0.00 due the petitioner under paragraph (g) of section 209."

To this answer the relator demurred. The court overruled this demurrer and dismissed the petition, from which the relator prosecutes this appeal. The brief says in part:

Clearly paragraph (g), read in its ordinary meaning, authorizes the commission to issue more than one certificate. The commission is to certify the several "amounts." This "amounts" cannot mean amounts to all the carriers, for the paragraph says "the several amounts (in the plural) necessary to make good the foregoing guaranty to each carrier." Also, the secretary is directed to draw "warrants" (in the plural) in favor of "each" carrier (in the singular). There is, of course, to be but one warrant for each certificate, so the words "for the amount (in the singular) shown in such certificate (in the singular) as necessary to make good such guaranty," are entirely consistent with the petitioner's theory.

Manifestly, Congress was not concerned with the number of payments to be made, but merely with establishing an absolute safeguard against overpayment by requiring certification by the Interstate Commerce Commission. Congress could safely leave to the commission the details incident to ascertainment. There was no intent to place any limitation upon the time at which payments definitely ascertained to be due might actually begin. The prime purpose of the act, insofar as the guaranty provisions are concerned, being to assure the carriers a "railway operating income," and the ascertainment and certification by the Interstate Commerce Commission (the body equipped to check with absolute accuracy the railway accounts) being for the purpose of precluding any payment in excess of the amount necessary to make good the guaranty, the restriction to one payment becomes entirely foreign to the Congressional intent. The obvious in-

tention of Congress was that there should be ascertainment and certification in such form as satisfied the Interstate Commerce Commission, and as many certificates and warrants thereon as might be necessary to make good to the carriers the guaranty of "railway operating income."

Congress did not intend to penalize the carriers which did not during the guaranty period apply for advances. A carrier might have been so possessed of funds prior to September 1, 1920, as not to have been able to bring itself at that time within the terms "necessary to enable it to meet its fixed charges and operating expenses," and yet on December 1, 1920, because of increased operating costs and decreased revenue, be desperately in need of amounts ascertained to be due it by the United States under the guaranty provided in the transportation act. The failure to ask for a mere advance on a sum of money estimated as hereafter possibly to become due, can certainly have no relation to the right later to collect an amount definitely determined and past due.

The amount due under the guaranty is to be ascertained by reference to the difference between the transportation receipts of the carrier during the guaranty period and the expenses during that period properly chargeable to operation in arriving at net railway operating income. Thus an increase in receipts or a decrease in expenses would decrease the amount of the guaranty, whereas a decrease in receipts or an increase in expenses would increase the amount of the guaranty.

But since the guaranty period, from March 1 to September 1, 1920, has been completed, the receipts are now definitely known and were known when the commission's certificate was issued on November 24, 1920, and, although these receipts may be decreased by some bills proving uncollectible, they cannot possibly be increased. The exact expenses of the guaranty period are not yet known. There are outstanding law suits, for example, which may increase the expenses, but a part of the expenses are now certainly known. Under paragraph (f) (3), section 209 of the act, the commission, in arriving at the amount of the guaranty, is to fix the amount to be allowed for maintenance expenses under a definite rule set out in the statute. That rule is that the commission shall allow the same amount of maintenance expenses as is provided for "in the proviso in paragraph (a) of section 5 of the standard contract." This proviso requires the allowance of the same maintenance expenses as during a corresponding period of the test period, plus additional amounts made necessary by the increased cost of labor and materials during the guaranty period over what they were during the comparable part of the test period.

It is, therefore, manifest that it is possible now to ascertain a minimum amount for these maintenance expenses, to-wit: what they are already known to be for the test period, and for the commission to know, not to guess, that at least that amount is to be allowed for expenses, and that this amount of expenses may be increased, but cannot be decreased.

There is nothing in the Transportation Act, 1920, which suggests that the secretary has any discretionary power. Assuming that the relator's construction of the act is correct, the duty of the secretary to draw the warrant is purely ministerial. None of the statutes quoted in the answer of the secretary by the language used in them, expressly limits the duty of the Secretary of the Treasury to draw a warrant under paragraph (g) of section 209 of the Transportation Act, 1920, and none of them enables him, by referring the question of his prospective act to the Comptroller of the Treasury, to convert a ministerial duty into a discretionary power. So to hold would be to say that the Secretary of the Treasury may, at his election, always subordinate the mandate of the Congress to his will.

If his power be one of discretion to draw warrants or not as he is advised by the Comptroller of the Treasury, after the certification by the Interstate Commerce Commission, under paragraph (g), of section 209 of the Transportation Act, 1920, there must disappear the right to compel him to draw a warrant no matter what the form of the certificate. In other words, if the statutes quoted in the answer as affecting the disbursement of the public funds by the Secretary of the Treasury are so general and all embracing in character that they make the decision of the Comptroller of the Treasury binding in all cases involving the payment of money from the Treasury, then all the power respecting payment of moneys expressly appropriated is in the hands of the secretary and the comptroller. And if this is so, then until the Congress repeals these general statutes (useful and necessary in connection with the disbursements to which they really apply), any special appropriations for the public welfare may fail of realization, and the courts of the United States will be powerless to enforce the deliberate and lawful Congressional intent.

But the answer of the secretary is not the law. A clear and simple distinction exists between two classes of payments to be made from the public funds. There are other payments to be made from the public funds than those to which these statutes refer. For example, the comptroller cannot decide that a federal

judge should have certain deductions made from the salary provided for him by the Congress. Such a contention has been expressly denied.

Congress has under the Constitution the full power to appropriate the public funds. It may make a special appropriation for a definite and lawful public purpose and direct its payment forthwith from the Treasury, or it may appropriate for the payment of unascertained amounts for a definite and lawful public purpose and create a special body with full discretionary power to ascertain the amounts lawfully due under the appropriation. In neither of these cases could the Comptroller of the Treasury change the amount of the appropriation definitely made by Congress or definitely determined by the body authorized to ascertain such amount.

By the Transportation Act, 1920, Congress expressly named the Interstate Commerce Commission as the body which should "ascertain and certify to the Secretary of the Treasury the several amounts to make good the foregoing guaranty to each carrier," and directed the secretary to draw warrants thereon and appropriated "an amount sufficient to pay such warrants." Consequently, in the words adopted by the Supreme Court in *Smith v. Johnson*, supra, "the opinion of the Comptroller of the Treasury was extra-official, was not required by law, and constituted a purely gratuitous act." If by the proper construction of the act as determined by the court the relator is entitled to a warrant, no adverse decision by the comptroller can prevent the court from issuing its writ of mandamus to compel the Secretary of the Treasury to draw such warrant.

The comptroller and the treasurer are not made parties to this proceeding because they have not as yet failed in the performance of any duty. The relator does not admit that there is any necessity for the comptroller to sign a warrant issued by the Secretary of the Treasury under section 209 (g) of the Transportation Act, 1920, but if it is necessary for the comptroller to countersign it he obviously cannot do it until the secretary has first drawn the warrant. When the secretary has drawn the warrant it is then a mere ministerial act for the comptroller to countersign it.

Hearing on Proposed Amendment of Clayton Law

WASHINGTON, D. C.

HEARINGS BEFORE THE SENATE committee on interstate commerce on the proposed amendment of Section 10 of the Clayton law relating to railroad purchases were concluded on January 14. Chairman Clark of the Interstate Commerce Commission in continuing his testimony, which was reported in last week's issue, said the commission recommended the addition of two paragraphs to the bill, to provide that it shall be unlawful for any officer, director or agent of a carrier to receive, directly or indirectly, any benefit or profit in respect of the negotiation, hypothecation, purchase or sale by the carrier of any stocks, bonds or other evidences of interest or indebtedness issued by a carrier or non-carrier corporation, also to require reports to the commission of any such transactions. Mr. Clark said that Section 20-a of the act contains a similar provision with relation to securities issued by a carrier and that the proposed amendment would apply to the sale by a carrier of securities that are not issued by it.

Senator Smith took occasion to question Chairman Clark regarding the surcharge for Pullman passengers authorized by the commission in connection with the general rate advance. Senator Kellogg asked if it is not right that the Pullman passenger pays more to the railroad than the coach passenger. The commission thinks so, said Mr. Clark, because the Pullman car is much heavier than the coach, while it accommodates less than half as many passengers, and the commission thinks it is a sound proposition that the railroad is entitled to more for the more comfortable and more expensive service it furnishes for Pullman passengers. Senator Smith insisted that the passenger pays the Pullman Company for that service when it buys a Pullman ticket, but Mr. Clark said it is a question whether he is paying enough for it. He also said that the commission felt it was not either fair or wise to place the entire increase on the

freight rates without any increase on passenger rates because that might have made the freight rates so high as to tend to reduce traffic. Senator Townsend asked whether the increase in passenger fares had actually resulted in an increase in revenue, and Chairman Clark produced the figures to show that while in September, 1919, the passenger earnings were \$110,000,000, in September, 1920, they were \$129,000,000, and whereas in October, 1919, they were \$99,000,000, in October, 1920, they were \$114,000,000.

S. W. Brookhart, representing the Iowa division of the Farmers Educational and Cooperative Union, appeared before the committee to urge that Section 10 of the Clayton law be kept in effect, that is, that no effort be made to pass the existing bill over the President's veto. He said the railroads should be held strictly to the provisions of the Clayton law, but he had no suggestions to make as to whether it should be amended.

Glenn E. Plumb, representing the organized railway employees, read a long statement to the committee, in which he cited examples of so-called interlocking directors, in support of his contention that both the railroads and the supply companies are controlled by the great financial interests. He commended the suggestions for an amendment of the Clayton law proposed by the Interstate Commerce Commission, but declared that neither the Frelinghuysen bill nor the Clayton law is sufficient to reach what he considered to be the real evil in the situation. He said the law was intended to regulate transactions between companies which have common directors or officers, but that the bills do not get at the situation where the directors and officers of a railroad and of an equipment company or banking institution are separate, but are appointed by the same financial power. He said that while the railroads are regulated, the locomotive companies are not, and when the financial interests cannot get enough profit from the railroads they take it out of the locomotive companies by charging the railroads excessive prices. Mr. Plumb said the Frelinghuysen bill contains so many exceptions as to permit it to be wholly evaded by a selfish board of directors.

Exchange Surcharge on Shipments Between U. S. and Canada

THE BOARD OF RAILWAY COMMISSIONERS FOR CANADA has issued a general order by which the railway companies subject to its jurisdiction are permitted to publish and file tariffs, effective January 22, providing for an exchange surcharge on international shipments, other than coal and coke, to be added to the total through charges including advanced charges payable to United States carriers, when payable and collected in Canada, as follows:

1. A surcharge of 60 per cent of the rate of exchange, arrived at in accordance with the provisions of this tariff, will be added to the total through charges, including advanced charges payable to United States carriers, on all shipments between Canada and the United States, in both directions, when such charges are payable and collected in Canada. When all charges are paid at United States points in United States funds, this surcharge will not be added.
2. On shipments from Canada, the surcharge must be collected at the rate governing on the date of the bill of lading; and on shipments to Canada, at the rate governing on the date of advice note of arrival at the Canadian destination. Such surcharge will accrue entirely to the Canadian carrier.
3. Telegraphic advice will be sent to railway agents in Canada on the last day of each month, specifying the surcharge to be collected from the first to the fourteenth (inclusive) of the following month; and on the fourteenth day of each month, specifying the surcharge to be collected from the fifteenth to the last day (inclusive) of such month. Agents must file such telegraphic advice with this tariff. The surcharge must be shown as a separate item on all bills of lading and waybills for outbound shipments and on all freight expense bills.

Exception.—This tariff does not apply to export and import traffic from or to points of origin or destination in the United States via Canadian ports, on which all charges must be collected in United States currency or its equivalent.

Note.—In arriving at the surcharge, the rate of exchange quoted for New York funds by the Bank of Montreal at noon in Montreal on the last day of each month will govern from the first to the fourteenth (inclusive) of the following month; similarly, such quotation at noon on the fourteenth will govern from the fifteenth to the last day (inclusive) of such month. Should the governing date fall on a Sunday or Canadian or United States legal holiday, the noon quotation of the preceding day will govern.

In determining the surcharge, fractions less than one-half will be disregarded and fractions of one-half or over will be counted as one per cent.

The rate of exchange quoted for New York funds by the Bank of Montreal at noon, in Montreal, on the 21st January, will govern from the 22nd to the 31st, inclusive.

The board further orders that, until otherwise ordered, the companies make monthly returns to the board showing the amount of surcharges collected.

About a year ago, complaints were made to the board, by exporters to the United States, that they had been prevented by the Canadian railway companies from prepaying the freight through to the point of destination in the United States in Canadian money. A hearing was held at Ottawa on March 16, 1920, at which practically all exporters were represented, and it was stated that, before the rate of exchange between the two countries became abnormal, practically all the commodities exported had gone forward collect. The board held that, under the railway act, a Canadian railway company could not be compelled to accept prepayment of freight.

Shortly thereafter, the American railways began demanding the prepayment of international freight to Canada, the result being that, with very few exceptions, the freight on all international traffic between the two countries was paid in the United States in United States funds, and the Canadian importers began pressing for relief.

At first the exporters demanded the right to prepay the whole rate in Canadian funds, which would give them an advantage in that they would be able to pay the American end of the haul in Canadian funds, which were then as now worth less than the American dollar. Shortly thereafter, however, the demand from all classes of business men was that the Canadian end of the haul should be paid in Canadian funds. This was vigorously opposed by the railway association and the railway companies on the ground that shippers both ways would naturally forward their goods by that route the longest possible portion of which would be in Canada. In other words, the American roads would be short-hauled in practically every international transaction in Canada, excepting possibly exports from the greater portion of the Maritime provinces, and, while this would be good business from the standpoint of the Canadian railways, it was argued that, in a very short time, it would result in complete disruption of the whole international rate structure which has been laboriously built up during the past 35 or 40 years.

On December 21 last, the railway companies were told that a solution of some kind must be found for the difficulty, and one which would in the end practically amount to paying the Canadian end of the haul in Canadian funds. On January 6, at a conference with representatives of the railway companies of Canada, a proposal was made which was accepted in principle, and on January 11 a written statement was furnished the board by the Railway Association of Canada, which was the result of extended negotiations between that body and the Board, proposing the plan which has just been approved.

This arrangement will also apply to the American roads, which, while not compelled to send their freight forward collect, have given assurance that they will do so because they will hold the Canadian railways responsible to repay them their share in American funds, and arrangements are now

being made by the Canadian roads to have these goods forwarded collect, thus giving both the Canadian importer and exporter the right to pay the whole freight rate on international business in Canadian funds.

"It is quite evident that the Canadian road which has a short Canadian haul and a long American one is at a disadvantage," says Chief Commissioner F. B. Carvell, in a report on the subject, "whereas the road which possesses a long Canadian haul as compared with the short American one has a distinct advantage in this arrangement, but it was frankly admitted both by the railway companies and the board that whatever was done must be on the broad principle of averages, and, therefore, some roads as well as communities must be benefited to a greater extent than others.

"Without going into details we found, after a very careful consideration of the total international traffic carried by the railway companies of Canada, based upon their respective divisions with American connections, that the traffic on the Canadian Pacific would be more nearly divided equally between Canadian and American hauls respectively than any other of the large systems, and their figures showed the American end to be somewhat larger than the Canadian. The Canadian National figures showed a slightly increased Canadian haul on an average over the Canadian Pacific, but the Grand Trunk showed quite a large percentage of the American haul greater than the Canadian. Putting together the business of the Canadian National and Grand Trunk systems, they average practically the same as the Canadian Pacific business. When we come, however, to roads such as the Quebec, Montreal & Southern and the Toronto, Hamilton & Buffalo, there we find that from two-thirds to three-quarters of their international business is on the United States end, the Toronto, Hamilton & Buffalo showing about 72 per cent, and, of course, as they will only receive a surcharge of 50 per cent, they will lose to quite an extent on all international traffic. However, as before stated, I have concluded that the principle of average is the only feasible method under present conditions by which this difficult problem can be solved at the present time, and, therefore, think that a surcharge of 60 per cent of the total rate of exchange is the figure which will on an average place the Canadian roads in a position to pay the American connections in American funds and yet leave them Canadian funds for their own portion of the haul.

"It will be observed that this arrangement does not apply to the rate on coke and coal, the reason being that these commodities move practically altogether on local rates breaking at the border, and, as the Canadian importers have since May last been allowed to pay the Canadian end of this business in Canadian funds, no change is necessary.

"Neither does it apply to export and import traffic from or to points of origin or destination in the United States via Canadian ports, which still must be paid in United States currency, because, were this allowed to be paid in Canadian funds, it would practically mean that goods originating in the United States, exported through Canadian ports, would pay a less freight rate than if exported from American ports. This would be discriminatory as against the American railroads and would break up parity of export rates between Canadian and United States ports now in existence.

"While these arrangements are not perfect, yet, in my opinion, it is the best solution of the problem so far advanced by any person, and I feel sure it will grant a great measure of relief to the business interests of Canada."

EXTRA SLEEPING CARS required on the Pennsylvania Railroad for the movement of passengers in the week of December 17-24 numbered 322, the largest demand on any one day being for 161 cars. During the same week the loading of mail-storage cars—cars loaded solid with mail—increased by 53.7 per cent.

Service Tests of a Substitute Tie

THE FACT THAT CONSIDERABLE attention has been given of late to the study of substitute ties and to estimates of the available supplies of timber in our forests lends interest to the service record of a substitute crosstie that has been subjected to tests under actual service conditions in a heavy traffic main line for a period of four and one-half years. Based on the results secured with this installation, various other railroads of this country have contracted for crossties of this type, one installation of three-quarters of a mile having been recently placed in service.

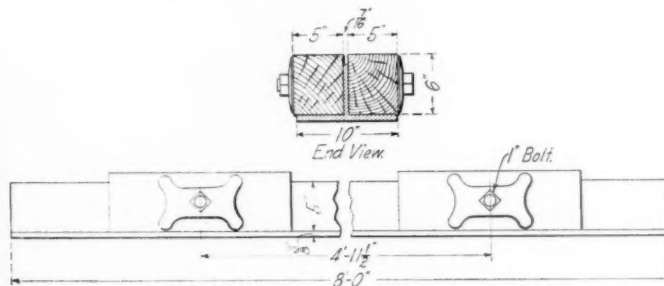
This tie comprises a combination of steel and wood known as the "Peerless" steel tie manufactured by the Tri-City

structural steel portion of these ties is of uniform section throughout its length, but the ties may be had with portions of the base cut away between the rail bearings with a view to obviating possible center binding. The rail bearing consists of a pair of treated timber blocks resting on the base and clamped on either side of the stem. These blocks are 6 in. by 5 in. by 18 in. and are held securely in place by a one-inch bolt equipped with forged steel plate washers with large bearing areas. With the use of treated timber, an estimated life for these blocks equal to or better than the demonstrated life of treated ties is considered conservative, but whenever renewals of these blocks are required for any reason, such renewals may be made at an expense of time and labor that is insignificant compared with the operations involved in renewing a crosstie of the ordinary type. Owing to the greater bearing area of these substitute ties as



Inspection Party Examining an Installation of Steel Ties Near Parkesburg, Pa.

Steel Company, St. Louis, Mo. The principal advantages to which attention has been drawn with respect to this design of crosstie, in addition to provision for adequate strength and ample bearing surface on the ballast, include: A rail bearing of wood affording positive insulation, the employment of ordinary cut and screw spikes for the rail fastening, simplicity of design and ease with which the wooden portions of the tie may be replaced when necessary. The tie consists of a rolled T-section placed in track with the stem up. The base is 10 in. wide by $\frac{3}{8}$ in. thick and the stem is 5 in. high by $\frac{7}{16}$ in. thick. The length is ordinarily 8 ft. but may be varied as desired. As a rule the



Typical Details for a "Peerless" Steel Tie

compared with the usual size of wooden ties some saving could be accomplished by the use of a smaller number of the ties in track.

The original installation of these ties was made on the Chicago & Alton in May, 1916, when one of the tracks across the Robey street subway, at Chicago, was equipped with them. Subsequently 250 more of these ties were placed on the subway at Twenty-second street and Canal street, both of these subways being ballasted structures. Special observations have been made of these installations from time to time and recent inspections disclose no appreciable deterioration of any kind and no expenditures have been made for line and surface on the portions of the track equipped with these ties during the period of service. A more recent installation of the ties embraces three-quarters of a mile of track on the Pennsylvania system low-grade freight line, near Parkesburg, Pa., about 40 miles west of Philadelphia.



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Docks and Railroad Terminal at Tampico

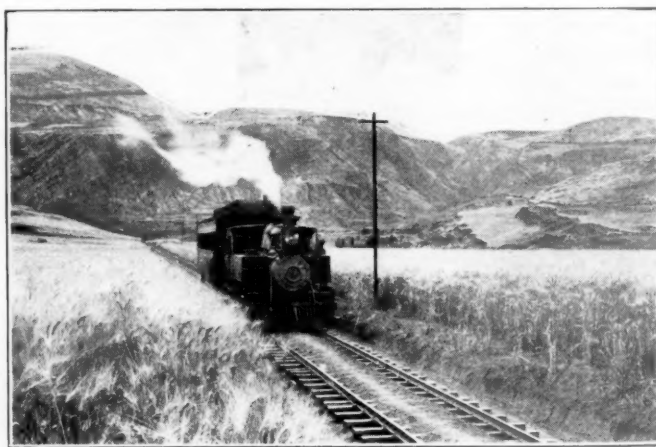


Photo from Keystone View Co., Inc., N. Y.

Wheat Field on the Huancayo Line of the Central of Peru

General News Department

The Louisville & Nashville, according to a statement credited to R. R. Hobbs, superintendent of telegraph, has bought wireless telegraph apparatus to be installed at Louisville, Ky.; New Orleans, La.; Mobile, Ala., and Pensacola, Fla.

The session of the Telegraph and Telephone section of the American Railway Association which was to have been held at Atlanta, Ga., on March 22, has been cancelled in the interest of economy. The section will hold no committee meetings until April 1.

President Obregon, of Mexico, according to a press despatch, has decided, following a conference with his cabinet, to appoint a commission to investigate the general railroad problem, with a view to formulating propositions for the return of the railways, by the government, to their owners.

The Associated General Contractors of America will hold their second National Conference at New Orleans, La., on January 25, 26 and 27. In order that the various types of construction may be fully covered, the papers and subsequent discussion will be carried on simultaneously in four groups—building, highway, public work and railroad.

The Eastern Railroad Association announces that E. N. Bessling has been elected secretary in place of D. G. Stuart, deceased; and that on March 1 Melvin H. Coulston, who now is first assistant commissioner of patents, will become assistant counsel of the association; headquarters, of both secretary and counsel, 614 F street, N. W., Washington, D. C.

The House committee on interstate and foreign commerce has announced a hearing, to begin January 20, on the bill introduced by Representative Esch to amend the railroad valuation act by striking out the provision requiring the Interstate Commerce Commission to ascertain and report the cost of acquisition of land in addition to its original cost or present value.

Baltimore & Ohio Safety Rallies

Twenty-four safety rallies are being held by the Baltimore & Ohio, in 24 different cities, beginning with New York (St. George, Staten Island), on January 17 and ending at Jenkins, Ky., on February 24. John T. Broderick, superintendent of the Safety Department of the road, makes the principal address at each meeting, and large halls are utilized in each place. Employees are invited to bring their wives and sons and daughters, and Marcus A. Dow's motion picture "Bulletin 70," is shown. Musical entertainment is provided.

Presentation to R. C. Richards

One thousand safety workers on the Chicago & North Western, members of 85 safety committees of the road, gathered at luncheon on January 15 in Chicago, to honor R. C. Richards, general claim agent, and chairman of the Central Supply Committee of that road. Mr. Richards, who is 66 years old, is the pioneer in "safety first" on American railways, having inaugurated safety work on the Chicago & North Western in 1910. He has since taken a leading part in safety work on American railways. At the luncheon Mr. Richards was presented with a silver service by his associates.

Resume Separate Operation

The Boston & Maine and the Central Vermont have resumed the separate operation of their single-track lines between Brattleboro, Vt., and East Northfield, Mass., ten miles. Under government operation these two lines were operated together as a double track railroad; but business is now

light, and the Boston & Maine, which carries the larger part of the business, believes it will be more economical to keep its trains on its own line.

The New York, New Haven & Hartford now runs freight trains over its line from Northampton, Mass., northward to Turners Falls, 20 miles. This line, which is parallel to the Boston & Maine, was closed during federal operation.

Safety Appliances for Cars of Special Construction

The Interstate Commerce Commission at a conference held on December 6 adopted the following ruling regarding the application of safety appliances on cars of special construction:

Cars of special construction, as contemplated by the commission's order of March 13, 1911, are cars which can not be equipped with safety appliances as prescribed in the order for any specified classes enumerated therein. In the construction of new equipment which does not conform to the specified classes designated in the order, plans shall be submitted to the commission prior to construction of such cars for the purpose of determining the location and application thereto of all safety appliances required by statute and the order of the commission of March 13, 1911.

Accident Bulletin No. 76

The Interstate Commerce Commission has issued Accident Bulletin No. 76, dated December 7, 1920, containing statistics of railway accidents in the United States during April, May and June, 1920.

Twenty-nine passengers, 93 employees and six other persons were killed in train accidents during this quarter and 1,271 passengers, 690 employees and 23 other persons were injured; a total of 128 persons killed and 1,984 injured. Adding casualties in train service accidents—1,323 killed and 12,383 injured; and those in non-train accidents—112 killed and 25,398 injured—we have a total for the quarter of 1,563 persons killed and 39,765 injured.

The number of collisions reported in this quarter was 2,189 and of derailments 4,952. Adding miscellaneous accidents to trains we have a total of 7,883 accidents with total damage to cars and roadway of \$7,762,500.

The Pullman Company Wage Reduction

Conflicting reports resulting from an account of a so-called voluntary wage cut of 20 per cent by employees of the Pullman Company at Chicago, have simmered down to two or three authoritative outstanding facts.

In the first place, the suggestion of a wage cut was made by J. B. Weaver, vice-president in charge of construction of the Pullman Company, who advised the employees at the Pullman Car Works, which is an open shop employing 9,000 men, that a decrease in their pay was necessary. The matter of reductions in pay at the Pullman repair shop, which is unionized, has not yet been brought up.

At present, the company is restoring its men at the Pullman repair shop to the basis of a nine-hour day, as against the eight-hour day under which they have been working. The nine-hour day will apply five days a week, with a five-hour day on Saturday.

Automatic Train Control

The Interstate Commerce Commission has issued a notice to the press that in the administration of Section 26 of the Interstate Commerce law, the commission has invited the co-operation of the American Railway Association, and that a joint committee on automatic train control has been appointed by the association.

The Bureau of Safety and the A. R. A. committee have

taken preliminary steps, with a view of conducting more extended service tests of automatic train control devices than have heretofore been made under official supervision, for the purpose of determining the relative merits of various types of devices, as well as the availability for general practical use of selected devices. Locations for test installations are now under consideration, and specifications and requirements are in course of preparation. Announcement of the locations selected and of the specifications and requirements applying to each of such locations will be made in due course.

The selection of devices for these test installations will be made in each case by the A. R. A. committee and the railroad company on whose line the installation is to be made, subject to approval by the Interstate Commerce Commission. These selections will be made upon the basis of plans filed with the Bureau of Safety, Interstate Commerce Commission. All meritorious devices which have heretofore been considered, or which may hereafter be submitted, will be given due consideration. With respect to devices heretofore considered, it is important that accurate and up-to-date plans should be on file for consideration.

Bertrand's Cab Indicator

Among numerous cab signal experiments now being tried on French railroads—all of the companies having been informed that the government desires decisive action in this direction—is an apparatus which was devised by U. Bertrand, formerly principal overseer on the Paris, Lyons & Mediterranean and is described in a recent number of *Genie Civil*.

In a box fixed in the cab and connected by a transmitting mechanism with an axle of the locomotive, is a speed indicator actuating a pointer on a dial, and also controlling a movable diagram of the road, showing the location of every roadside signal. This is printed on a ribbon, sections of which are successively brought before a glass-covered opening as the locomotive proceeds.

On beginning a trip, the engineman sets the apparatus at a prescribed starting point (corresponding to the actual starting point of the train) so that a bell, connected with the indicator, will be sounded at the proper time to warn him of his approach to the next fixed signal. The movement of the pointer on the dial, the sounding of the bell and the appearance of the signal location on the movable diagram (at the proper point under the glass, for the engineman's eye) are produced in unison.

After passing a signal the engineman must reset the apparatus for the repetition of the same operation in relation to the signal next to be encountered.

The inventor proposes that the apparatus be used for other purposes; as, for example, by an engineman not well acquainted with the line to give him warning, at the proper time, of his approach to a steep grade, or to a curve where speed must be slackened.

The descriptive account, reprinted in the Bulletin of the International Railway Association for November, page 799, gives no indication as to the extent to which this apparatus has been used or tested.

The Proposed Hudson River Bridge at New York City

The Hudson River Bridge Corporation has been organized, in New York, and incorporation papers were filed in Albany on January 18. The capital, for the present, is \$251,000, and the directors are George A. Post, R. A. C. Smith, John H. Love, Henry D. Walbridge, Thomas H. Simpson, Fulton MacMahon, W. J. Amend, George T. Smith and George F. D. Trask. The corporation has been organized to promote the construction of a bridge from the design, familiar to our readers, which has been made by Gustav Lindenthal, designer of the Hell Gate bridge. An organization committee of 85 members has been formed, with a view to securing the co-operation of capitalists. The entire plan, which includes terminals in Manhattan and large railroad yards in New Jersey, it is estimated will cost \$200,000,000. Among members of the organization committee are T. DeWitt Cuyler, Julius Kruttschnitt, L. F. Loree, Ira A. Place, Ralph Peters, George A. Post, Samuel Rea, John F. Wallace and Roberts Walker.

The proposed bridge would accommodate both railroad and highway traffic; it would have 14 tracks and a capacity equal to that of 20 tunnels, while its estimated cost is less than one half as much as the cost of that number of tunnels.

The announcement which is now issued gives a brief history of the proposal for a bridge across the Hudson, which, it is said, has been seriously contemplated for 30 years. But for the panic of 1893, the recent World War, and other unavoidable obstacles, it is declared that a bridge would in all probability have been built long before now.

The proposed site of the bridge is about opposite 59th street, Manhattan, and the plans show a main span which in the center would be 165 feet above the water. Its estimated capacity would be 600,000 persons an hour, as compared with 700,000 aggregate capacity of all four of the present bridges across the East river.

Cleveland Over-and-Short Bureau

At Cleveland, Ohio, the seven principal railroads have established an over-and-short bureau, to which all local freight agents of the city are to report, and where freight astray on one road can be connected with way bills containing "short" items on other roads. The bureau is in charge of the car service committee, H. F. Dunkle, chairman. At Pittsburgh, Pa., a bureau of this kind is said to have found way bills for about three-fourths of all of the "over" shipments reported.

Retrenchment on the Pennsylvania; 20 Per Cent

The Pennsylvania Railroad, which made extensive reductions of forces in November, throughout the System, intended to equal 10 per cent, whenever possible, has this week ordered a further reduction of the same extent, and the "lay-off" will be enforced in clerical and official departments, as well as others, wherever practicable. President Samuel Rea on Wednesday issued a statement saying:

"There is no arbitrary rule adopted. The principle on which the reduction will be made is to secure the utmost economy consistent with safety and efficiency. The vice-presidents, however, have been directed that in carrying out these instructions they should do so in the manner best adapted to avoid, so far as possible, unnecessary disruption of the organization, or individual hardships.

"It is to be hoped that the deduction in business will continue for only a brief period. The management sincerely regrets that uninterrupted employment cannot be assured to every faithful man on its payroll. But the situation is a practical one and no way has as yet been devised in such circumstances as those now existing to avoid a reduction in expenses and working forces.

"The Pennsylvania Railroad system now has on its lines 58,000 idle freight cars, which is about 20 per cent of the number owned, and the idle cars are increasing daily. Freight traffic has declined 20 to 22 per cent, as compared with the early fall, and all available information as to the prevailing conditions in the productive industries and general commerce indicate that a further slowing down in the freight movement must be anticipated before recovery can be reasonably expected. * * *

Plans are being considered at Pittsburgh for effecting the necessary reduction in expenses by the adoption of a rule for each employee, in a given department, to lie off one day in each week.

At various points yard switching crews are laid off, storehouses temporarily closed and roundhouse forces reduced.

The Long Island road has within two months laid off about 800 men.

Post Office Needs Additional Appropriation

for Railroad Mail Pay

The Postmaster-General has asked Congress for a supplemental appropriation to meet a deficiency of \$35,840,000 in the appropriation for the transportation of the mails by railroad routes for the fiscal year ending June 30, 1921. The item is necessary by reason of the application of the increased rates for mail transportation fixed by the Interstate Commerce Commission in its order No. 5200 of December 23, 1919.

For the June, 1920, quarter, the Postmaster-General says in his letter, the value of the regular service will be approximately \$20,269,557.90, and the emergency service \$2,373,679.21, a total of \$22,643,237.11, or an annual rate of \$90,572,948.44. The annual rate of the service authorized on June 30, 1920, was \$83,731,068.47. Upon this basis the actual payments for the entire service amounted to \$6,841,879.97 (or 8.17 per cent) over and above the annual authorized rate.

"The annual rate authorized September 30, 1920, was \$81,212,-343.61," he says. "Increasing this amount by 8.17 per cent we have an estimated annual expenditure for the current fiscal year of \$87,847,392.08, to which should be added \$1,250,000 for the transportation of periodical matter by freight; \$800,000 (estimated) for the Air Mail Service, and \$5,830,000 (estimated) for side, terminal, and transfer service. The latter item is based upon an estimate of \$253.50 for each of the 23,000 points, approximately, where the department must provide for the handling of the mails between railroad stations and post offices under the commission's order. The foregoing items aggregate \$95,727,-392.08, or \$35,840,570.08 over and above the current appropriation of \$59,886,822. It is therefore recommended that an additional appropriation of \$35,840,000 be asked of Congress to pay for the transportation of the mails by railroads for the fiscal year ending June 30, 1921."

A deficiency of \$94,700 will also be created with regard to the appropriation for the transportation of the mails by electric and cable cars for the fiscal year ending June 30, 1921, as an effect of the Interstate Commerce Commission's order of August 7, 1920, fixing the rates for the transportation of the mails by urban and interurban electric railway common carriers, which order became effective December 1, 1920. The authorized annual rate on December 1 was \$561,542.86. The estimated annual rate for the performance of side, terminal, and transfer service is \$145,950. The combined annual rate is therefore \$707,492.86, or \$162,492.86 over and above the current appropriation of \$545,000. It is therefore recommended that an additional appropriation of \$94,700 be granted to pay the increased compensation for this service for the seven months from December 1, 1920, to June 30, 1921.

The Long Island and Its Patrons

The Long Island Railroad, "to promote a better understanding of local and general railroad problems among patrons and employees," issues periodically an information bulletin, in the last number of which is a very terse, lucid and illuminating explanation of why the railroads must raise fares and freight rates. Some of the salient points of this manifesto follow:

The year 1920, with all its hopes, difficulties, disappointments and experiences, is now behind us. It was a prosperous year for the employees of the Long Island Railroad, the United States Railroad Labor Board having added over three million dollars per annum to the payrolls. Judging by statistics, Long Island generally had a prosperous year. The railroad carried approximately 73,000,000 people in 1920, an increase of about 9,000,000 over the previous year. Of the 73,000,000 passengers commuters numbered 33,563,000, and paid fares at the average rate of 0.74c. per mile. The average rate per mile paid by each passenger (all passengers), was 1.5 cents, while the actual cost to handle each passenger was 1.8 cents per mile. Both the freight tonnage and volume of passenger traffic increased very satisfactorily, and from this standpoint, the management is pleased, because a growing, prosperous territory is what it is striving for at all times. The financial results from operation, however, were highly disappointing. The gross earnings were \$25,913,000; operating expenses were \$25,116,000, leaving net revenue from railway operations \$797,000. After paying taxes, car hire and miscellaneous charges there was a deficit in railway operating income of \$833,000. Other income (non-operating) aggregated \$800,000, leaving a net loss from operation of \$33,000, while fixed charges amount to \$3,800,000, and six per cent return on capital stock amounts to \$2,040,000.

The United States Government assumed the losses up to September 1, 1920, so that the actual results to the corporation for the year 1920 will be a deficit in meeting all obligations, of about \$750,000. The present basis of rates will not enable the company to pay its way and rigid economy will necessarily have to be employed in all departments, and many little conveniences will have to be curtailed for the time being.

If it had not been for the war and the abnormal conditions affecting cost of operation which came from the war, the Long Island road today would be a paying proposition, and could command new capital necessary to keep ahead of the growth in population.

The management, while temporarily discouraged and in a

quandary as to where money can be secured to pay interest on the road's debts, nevertheless is not disheartened as to the future. The public bodies who hold in their hands the destinies of the transportation facilities of the country, will be compelled to act. While we shall be compelled to shut down and economize for a few months, eventually the rates will be increased, improvements will go on, the railroad will earn a return on the money invested in it, and then prosperity will abound on Long Island. * * * *

Testimonial to Chairman Cuyler

The meeting of the Association of Railway Executives which was held in New York City on January 7 was followed by the presentation to Thomas DeWitt Cuyler, chairman of the association of an Old English silver salver; and with it a letter, saying, on behalf of his associates:

"More than two years have now elapsed since you became chairman of this association. The future of rail transportation in America was enveloped in grave doubt and uncertainty. The railroads were confronted by many special embarrassments and complications; notably by—

A substantial conflict of public opinion as to private ownership or government ownership; a system of regulatory legislation which contained provisions for repression and restraint, but little of encouragement or support; the diverse and unco-ordinated policies and powers of many regulating authorities, State and Federal; impaired and inadequate credit growing out of the uncertainty in the minds of the investing public as to the future policies of the Federal and State governments * * *; and the constant menace of labor disturbances.

It was in these circumstances that you undertook your responsible duties. The problems pressing for immediate solution were perhaps the gravest which ever arose in respect to any industry, and, in magnitude, were second only to the problems of the war. The government having, as a war measure, taken possession and control of the railroads, it was necessary:

To negotiate a standard form of contract, fixing the compensation of the carriers and providing for the preservation and upkeep during, and for the orderly return after, Federal control of the carrier properties, and for a due accounting between the parties;

To oppose the effort of the railroad administration to extend Federal control for an additional period of five years;

To place at the disposal of Congress and the public the results of the experience and thought of the railway executives of the country to the end that legislation should be adopted providing for the return of the properties to their owners, with adequate guarantees during the reconstruction period, and introducing into the system of governmental regulation constructive principles of protection and support;

To present to the Interstate Commerce Commission and the public the then existing financial conditions and tendencies of the railroad industry to the end that there should be established a system of rates sufficient to provide a credit basis for adequate and efficient transportation facilities;

To effect by the general voluntary action of the various individual managements that degree of harmonious co-operation and co-ordination of the instrumentalities of transportation necessary to provide adequate and efficient service for the public;

To establish and promote a relationship of mutual helpfulness, confidence and understanding between the carriers and the departments of government charged with the duties of regulation; and

To promote the development of a more co-operative spirit between the managements and employees of the railroads.

Under your leadership, a measure of success, in respect to the accomplishment of these and other essential purposes, has been attained, which constitutes a new and creditable chapter in the economic history of our country, furnishing encouragement and hope to those who believe that the progress and welfare of mankind are promoted best by keeping the door of opportunity open to private enterprise and effort."

The committee arranging the gift consisted of Howard Elliott, (N.P.); S. M. Felton, (C. G. W.); Hale Holden, President, (C. B. & Q.); R. S. Lovett, (U. P.); C. H. Markham, (I.C.); Samuel Rea, President, (Penn.); Alfred P. Thom, General Counsel, Association of Railway Executives; W. H. Truesdale, (D. L. & W.); H. Walters, (A. C. L.), and Daniel Willard, (B. & O.).

Traffic News

C. A. Cairns, passenger traffic manager of the Chicago & North Western, has been elected chairman of the Western Passenger Association, succeeding L. M. Allen, vice-president and passenger traffic manager of the Chicago, Rock Island & Pacific.

The Effingham, a vessel of the United States Shipping Board, has sailed from Vancouver, British Columbia, with grain for Europe, a cargo of 2,000 tons of No. 1 Northern wheat. A further shipment of 5,000 tons of wheat for the United States Government and 3,000 tons for Havre will be made soon.

Commercial travelers, claiming to represent 700,000 traveling men, appeared before the general passenger agents of the railroads at Chicago, on January 7, to ask for the introduction of an interchangeable mileage ticket at a reduction of 20 per cent under the regular fares. They said that the present high fares were taking men off the road and consequently the railroads as well as the commercial interests were losing in freight and business.

Five general division officers of the Baltimore & Ohio are spending two weeks in an intensive course of getting acquainted with shippers and other patrons in Youngstown, Ohio, and vicinity, at the same time inspecting all of the railroad company's facilities in that region. These officers are O. S. Lewis, general freight agent; E. A. Peck, general superintendent; C. M. Gosnell, industrial agent; D. F. Stevens, superintendent, and A. L. Doggett, division freight agent.

The Shipping Board has adopted a resolution calling for the appointment of a joint committee made up of three members of the Shipping Board and three members of the Interstate Commerce Commission for the purpose of considering various provisions of the Transportation Act, 1920, as well as rates, regulations and other practices. The members appointed from the Shipping Board were J. N. Teal (chairman), F. I. Thompson and Guy D. Goff. The members from the Interstate Commerce Commission are C. C. McChord, Henry C. Hall and Mark W. Potter.

The Interstate Commerce Commission has vacated, as of January 15, its Service Order No. 19, which gave priority for certain coal commandeered by the Navy. The President, by the Secretary of the Navy, has certified to the commission that in view of the adequate coal car supply prevailing at present in Pennsylvania and Maryland fields, it is believed that the interests of the government no longer require preference and priority in transportation of coal commandeered by the Navy from mines located in those fields as required by Service Order No. 19, entered October 1, 1920.

The Southeastern Express Company

Express business over the lines of the Southern Railway and the Mobile & Ohio is to be handled, after March 1, by the Southeastern Express Company. This new company has been organized under the laws of Alabama for the purpose of conducting an express business in the Southeastern states. It will have a capital of \$1,000,000, owned by Southern business men, and will have headquarters in Atlanta, Ga. John B. Hockaday, formerly vice-president and general manager of the old Southern Express Company, will be president. Officers of the Southern Railway believe that the South should have an express company of its own, engaged primarily in handling business originating or terminating in the South. The new company will establish offices at all stations on the Southern and the Mobile & Ohio and will operate on about 10,000 miles of railway.

Mr. Hockaday has had over 40 years' experience in express service in the South. He was located in Savannah for 10 years as superintendent of the Florida division of the Southern Express Company and later was in Atlanta 10 years.

Commission and Court News

Interstate Commerce Commission

John E. Benton, solicitor for the National Association of Railway and Utilities Commissioners, has filed a motion with the commission for a reargument and an order setting aside the recent decision of the commission approving the continued consolidation of the transportation interests of the express companies into the American Railway Express Company.

The Interstate Commerce Commission has suspended from January 13 until May 13, 1921, proposed cancellation of the existing proportional rates of 14 and 15½ cents per 100 pounds on grain to Louisville, Ky., and Cincinnati, Ohio, respectively, from St. Louis, Mo., in instances where such shipments do not consist of grain originating at stations in Missouri within the 100 mile zone, and only when the inbound rate to East St. Louis, Ill., exceeds the rate to St. Louis, Mo., and on grain originating at such stations when handled under transit rules and regulations lawfully on file with the commission.

The commission has considered with the United States Shipping Board the question as to the application to import and export rates in connection with the provisions of section 28 of the merchant marine act of the well established principle that under the interstate commerce act a rate upon a given shipment cannot be changed while the shipment is in transit, and the common understanding has been reached that in the event the provisions of section 28 of the merchant marine act should become effective they will not apply to import shipments which, prior to that effective date have completed their ocean voyage and been turned over to the rail carriers, and will not affect export shipments which, prior to that effective date, have been delivered to, and receipted for, by the rail lines.

The commission has issued a notice saying that information received by the commission indicates a lack of uniformity by carriers in accounting for certain interroad items pertaining to the guaranty period with respect to the rendition and settlement of bills and other accounts as between carriers which accepted the provisions of section 209 of the Transportation Act, 1920. Some roads apparently have proceeded on the assumption that the preparation of certain interroad accounts and corrections pertaining thereto is unnecessary in view of the fact that the net effect to the government will be the same, as between roads accepting the guaranty whether or not interroad settlements are effected.

No instructions have been issued by the commission which would warrant such an interpretation and in the interest of uniformity and continuity of the accounts it is the intent that interroad bills and accounts and corrections thereof—with the exception of those covering per diem reclaims and per diem discrepancy claims between carriers accepting the guaranty provisions—shall be prepared and settled between all roads in the usual manner, whether or not the carriers are subject to the guaranty provisions of the statute.

United States Supreme Court

Mail Cranes—Danger from Them Obvious

Action was brought against the Southern Pacific for the death of an engineman who had been struck by the end of a mail crane, or a mail sack, that had been placed on it to be picked up by a following train. The crane stood at the same distance as all the others along the road, and its end, when elevated, was 14 in. from the train. It was supposed that the engineman was looking out of the side window to look at the main driving pin, which had been getting hot. The question was whether the railroad was liable under the federal Employers' Liability Act, or whether it is consistent with its duty to employees to erect cranes so near the track. The Texas courts found the railroad liable. The Supreme Court of the United States reverses the judgment for the plaintiff, saying:

"It is impracticable to require railroads to have no structures so near to their tracks as to endanger people who lean from the windows. Most passengers are familiar with cautions against putting out heads or arms. The farthest point at which a bag could be picked up is 29 in., and it requires a less distance than that to be sure of getting the bag. In short, it would be impossible to use the contrivance with absolute certainty that no accident would happen if a man put his head out at the wrong moment. It equally is impossible to condemn railroads as wrongdoers simply for adopting the device with the conditions imposed by the Post Office Department. When a railroad is built it is practically certain that some deaths will ensue, but the builders are not murderers on that account when the foreseen comes to pass. The adoption of an improvement in the public interest does not throw the risk of all incidental damage upon those who adopted it, however fair it may be to put the expenses of insurance upon those who use it. * * *

It was to be presumed that the engineman perfectly well knew of the existence and location of the crane. Confining itself to the case of postal cranes, the court was of opinion that to allow the jury to find a verdict for the plaintiff was to allow them to substitute sympathy for evidence and to impose a standard of conduct that had no warrant in the common law.—*Southern Pacific v. Berkshire*. Decided January 3, 1921. Opinion by Mr. Justice Holmes. Mr. Justice Clarke dissents.

Limitation of Initial Carrier's Liability

On June 10, 1918, a shipper delivered to the San Antonio & Aransas Pass, at Ingleside, Tex., a carload of vegetables consigned to himself at Dallas, a point off its lines. He accepted a bill of lading having printed on its face "For use only between points within the state of Texas." The car moved to Waco and then over the M., K. & T. to Dallas, whence, on the shipper's request, the M., K. & T. forwarded it to Kansas City over its own lines, took up the original bill of lading and issued a new one acknowledging receipt of the vegetables at Dallas. When the car reached Kansas City the contents were in bad condition and the shipper sued the San Antonio & Aransas as the initial carrier, claiming a right to recover damages under the Carmack Amendment. The court below held that the provisions in interstate tariffs permitting reconsignment or change of destination did not apply, that the railroad only agreed to transport to Dallas and was not liable for damage sustained beyond that point.

The Supreme Court of the United States affirms this decision for the reason that the railroad's contract related only to a movement between points in the same state. It had no notice or reason to suppose that the freight would pass beyond the destination specified. Neither shipper nor railroad had in contemplation any movement beyond the point specified and the contract between them must be determined from the original bill of lading and the local laws and regulations.—*Bracht v. S. A. & A. P.* Decided January 3, 1921. Opinion by Mr. Justice McReynolds.

A Prohibitive Classification of Freight; Exclusive Initial Jurisdiction of I. C. C.

Silk, artificial and natural, had been accepted by the railroads of the country for transportation as freight for many years at first class rates, when, on January 21, 1920, the Director General authorized a rule including silk among articles not to be accepted for shipment. The Viscose Company, a manufacturer of artificial silk, obtained an injunction from the Federal District Court in Pennsylvania forbidding the carriers to refuse to accept silk for transportation as freight. On appeal, the Supreme Court held that the District Court did not have jurisdiction to decide the matter. Classification in rate-making practice is held to be grouping. To exclude a commodity from all classes is classification of it. To strike artificial silk from the first class and to include it in the "prohibited list," classifies it and sets it apart in a group subject to special treatment, as much as if it had been changed to the second class. The attempted change of regulation, when challenged by the shipper, presented a question for decision within the exclusive initial jurisdiction of the Interstate Commerce Commission. The importance to the commerce of the country, the court said, of the exclusive initial jurisdiction which Congress has committed to the commission, cannot be overstated.—*Director General of Railroads v. Viscose Company*. Decided January 3, 1921. Opinion by Mr. Justice Clarke.

Foreign Railway News

Central of Brazil to Electrify

Some time during the current month the Central of Brazil will ask for bids for the electrification of its double-tracked line from Rio de Janeiro to Deodoro, a distance of 14 miles, according to reports received by the Bureau of Foreign and Domestic Commerce. Bids for further electrification will be called for later.

Indian Railway Officer Dies

Neville Priestley, of London, England, managing director of the South Indian Railway, died on December 13, at the age of 59. Mr. Priestley was born in India and had been connected with Indian railway affairs all his life. In 1903 he visited this country and made a valuable report for the government of India on the organization and working of American railroads.

Construction on Portuguese Railways

LONDON.

The Companhia Sintra-Atlantico, of Lisbon, is proposing the construction of an electric railway from Sintra to Estoril, Vascaes, and Boca to Inferno. Bids are being called for the work of laying down the necessary line and for its working during a term of 75 years.

Queensland Railways Inquiring for Rolling Stock

LONDON.

The government of Queensland, Australia, is asking for estimates for the supply of thirty-five 12-wheeled locomotives for 42 in. gage, cylinders to be 19 in. by 23 in. The tenders are to have two 4-wheeled trucks each. The approximate weight of the locomotive and truck empty is to be 66 tons, and the maximum length, 49 ft. 3¼ in. The estimates are to be delivered by March 15.

Swiss Mails and Railways to Be Combined

LONDON.

A suggestion has been made in connection with the proposed reconstruction of the Swiss public services calling for the unification of the staff of the state railways with the staff of the federal post and telegraph offices. This means that the station-masters in smaller places would become the heads of the local post and telegraph offices, while the trainmen of local trains would look after the mail bags.

A New Road for Ecuador

A road is projected from the port of Esmeraldas, Ecuador, in the direction of Quito. The proposed line will connect with a road already constructed from Quito to Santo Domingo de los Colorados and will thus open up a short route from Quito to the coast. The projected road will tap a fertile area of some 1,000,000 acres. The railway has been granted by the government a concession of about half of this land. Several valuable water power sites also will be acquired by the company under its concession. All details of this work can be secured from any of the offices of the Bureau of Foreign and Domestic Commerce by reference to file No. 17,821.

Railway Developments in Newfoundland

LONDON.

A plan of railway extension in Newfoundland proposes the construction of a through line from St. John's to Ships' Cove or St. Alban's on the south coast with a junction on the main line at Bishops' Falls or Grand Falls. A concession has been obtained from the government and progress has been made with the organization of a company and, should sufficient financial support be forthcoming, it is thought that the scheme will involve no cost

to the government. A line of steamers will be instituted from St. Alban's to North Sydney on Cape Breton Island in place of the present service from Port aux Basques, thus enabling Canada and the United States to be reached twelve hours earlier than at present. The proposed scheme also intends to include the Botwood railway which will connect the north and south coasts of the island and thus the inconvenience under which Newfoundland has suffered of having winter ports on the two extreme ends of the island only will be removed. The new line, which will run through a valley for some distance will be much less likely to be blocked up by snow or ice than the main line. The most difficult portion of the main line will be avoided and the rail haul reduced by about 200 miles. It is anticipated that the new branch line will be operated electrically from water power available near the southern terminus.

Receipts and Expenditures of English Railways

LONDON.

The Ministry of Transport has issued a statement regarding the financial results of the working of the railways during the six months ended September 30, 1920. The total revenue earned was \$453,501,111. The total expenditure was \$415,866,636, leaving a balance of revenue earned over expenditure of \$37,634,475. The standard year proportion of net receipts under the given guarantee was \$88,581,500, to which is added for interest on capital works brought into use \$2,026,500. Thus the net government liability for the six months ended September 30, 1920, is \$54,741,928. The traffic revenue earned was distributed roughly as follows: passenger traffic, \$223,982,885; freight traffic, \$247,562,711. For the month of September there was a net government surplus of \$799,697. This is the first surplus shown in any monthly return for the railways of Great Britain. The passenger receipts for September were \$38,923,500, or 17¼ per cent higher than those for the same month of 1919. Freight traffic for the month of September increased 124 per cent as compared with the receipts for the same month of the previous year. Tonnage has increased by about 14 per cent. The coal strike is estimated to have caused a loss in the revenue of the railways of approximately \$28,000,000.

London & North Western Manager Retires

Sir Thomas Williams, general manager of the London & North Western since March, 1919, retired from that position on December 31, and has accepted a seat on the board of directors. Sir Thomas joined the staff of the company mentioned in 1876. After holding railway positions in south and central Wales, he was appointed district goods manager at Warrington. He was appointed traffic superintendent of the metropolitan area in 1907. Four years later he became assistant to the general manager, with headquarters at Euston station to deal with labor questions and the work in connection with conciliation boards. On January 1, 1914, he was appointed chief goods manager. In February, 1917, the directors appointed him acting general manager and, in March, 1919, general manager. In August, 1919, he received the honor of knighthood. He has been a member of the railway executive committee and the railway advisory committee associated with the Ministry of Transport. He was especially successful in connection with labor questions, and took a keen interest in all matters pertaining to the welfare of the staff.

Sir Thomas Williams is succeeded by Arthur Watson, C. B. E., M. Inst. C. E., general manager of the Lancashire & Yorkshire, who now simultaneously fills the position of general manager of both the London & North Western and Lancashire & Yorkshire. Mr. Watson, after being associated with the engineering department of the Lancashire & Yorkshire for a number of years, was appointed, in 1905, chief assistant engineer. Six years later he was appointed superintendent of the line. In April, 1918, he was appointed assistant general manager in combination with the position of superintendent of the line. In January, 1919, the directors of the Lancashire & Yorkshire Railway appointed him general manager. Mr. Watson attended the International Railway Congress at Berne, Switzerland in 1910. He visited the United States and Canada in 1912, and while in this country studied the working of American railroads.

Equipment and Supplies

Locomotives

THE MONTGOMERY RAILWAY is inquiring for 3 Mikado type locomotives.

THE NORTHWESTERN PACIFIC is inquiring for from 4 to 6 locomotives.

THE PITTSBURGH & WEST VIRGINIA is inquiring for 3, 10-wheel switching type locomotives.

THE NEW YORK, NEW HAVEN & HARTFORD is inquiring for 10, 8-wheel switching locomotives.

RICHMOND, FREDERICKSBURG & POTOMAC is inquiring for one 8-wheel switching type locomotive.

Freight Cars

THE PEKIN-MUKDEN is inquiring through the car builders for 300 or more 44-ton capacity gondola cars.

THE ANGLO-BRAZILIAN COMMERCIAL & AGENCY COMPANY, Rio de Janeiro, Brazil, is inquiring through the car builders for 300 low side freight cars.

Passenger Cars

THE LAKE ERIE & NORTHERN has ordered 3 coaches from the Preston Car & Coach Company, Preston, Ont., Canada.

THE GRAND RIVER RAILWAY has ordered 6 coaches from the Preston Car & Coach Company, Preston, Ont., Canada.

Iron and Steel

THE VIRGINIAN RAILWAY has ordered 8,000 tons of rail from the United States Steel Corporation.

Signaling

THE PENNSYLVANIA has placed an order with the General Railway Signal Company, Rochester, N. Y., for 84 position-light signals, 112 track transformers, and 180 relays, to be installed (by railroad forces) between Downingtown, Pa., and Atglen, 14½ miles.



Photo by International

Railway Station at Point Isabel, Tex., Where President-elect Harding Spent Part of His Vacation

Supply Trade News

John T. Reagan, for several years in the sales department of the P & M Company, has been appointed assistant general sales manager of the **Creep Check Company** with offices in the terminal building, Hoboken, N. J.

C. L. Mellor, manager of sales of the **Barco Manufacturing Company**, Chicago, has been elected secretary of this company. Mr. Mellor will continue his duties in charge of sales in addition to his duties as secretary.

R. W. Levenhagen, secretary of the **Sherwin-Williams Company**, Cleveland, Ohio, has been elected vice-president in charge of auxiliaries of the **Glidden Company**, Cleveland.



R. W. Levenhagen

Mr. Levenhagen has spent the greater part of his life in the paint and varnish industry, having started with the **Sherwin-Williams Company** 25 years ago. He held various positions in the service of the **Sherwin-Williams Company** and rose steadily until he became secretary, which position he held until his recent election as vice-president of the **Glidden Company**. Besides serving as secretary of the **Sherwin-Williams Company**, he was vice-president and general manager of the **Detroit White Lead Works**,

Detroit, Mich., and vice-president of the **Martin-Senour Company**, **Chicago**, for a number of years.

John R. LeVally, formerly sales engineer of the **Locomotive Superheater Company**, at **Chicago**, has been appointed district sales manager of the company at **Pittsburgh, Pa.**, with offices in the **Union Arcade building**.

The **Austin Machinery Corporation**, of **Chicago**, has purchased the plant of the **Fairmont Mining Machinery Company**, at **Fairmont, W. Va.**, and will continue to manufacture this company's line of mining equipment.

The **Whiting Foundry Equipment Company**, **Harvey, Ill.**, has changed its name to **Whiting Corporation**. The **Whiting Corporation** remains under the same management and will make no change in its established operations or policies.

Martin J. Root, formerly of the **Fairbanks Company**, **New York**, has been elected president of the **United States High Speed Steel & Tool Corporation**, which has been reorganized. The headquarters of the company are at 489 Fifth avenue, **New York**.

George H. Grundy, for many years connected with the **Crucible Steel Company of America**, as manager of its **New York branch**, is now associated with the **Poldi Steel Corporation of America**, 115 Broadway, **New York**, as general sales manager, with headquarters at **New York**.

The **Black & Decker Manufacturing Company**, **Towson Heights, Baltimore, Md.**, has opened a new branch office and service station at 75 Fremont street, **San Francisco, Cal.** This office will have jurisdiction of the company's business over the entire **Pacific coast territory** and will be in charge of **M. A. Johnson**.

The **National Railway Appliance Company**, 50 East Forty-second street, **New York**, with branch offices in **Boston** and **Washington**, and the **Hegeman-Castle Corporation**, **Chicago**, announce that the selling agency for the **Clapp Fire Resisting Paint Company**, **Bridgeport, Conn.**, has been discontinued, effective **January 14**.

The **Howlett Construction Company**, **Moline, Ill.**, has taken over the selling and contracting end of the **Bay City Foundry & Machine Company's** coaling station business. **W. L. Johnson Company**, **St. Paul, Minn.**, will handle the sales in the **Minnesota territory**, while **F. H. Hopkins & Co.** will have charge in the **Montreal, Que., district**.

F. L. Cook, sales representative, and also in charge of the publicity department of the **Chicago Bridge & Iron Works**, at **Chicago**, is now in charge of the **Pacific Coast territory** of this company, with offices in the **Rialto building**, **San Francisco, Cal.** **Charles H. Sheldon** is the **Southern California representative**, with headquarters in the **Wright-Callender building**, **Los Angeles**.

The **Great Western Contracting Company**, **Kansas City, Mo.**, has changed its name to the **Rawlings Industrial Equipment Company**. This organization is sales engineer for various manufacturers of power plant machinery and is the representative of the **Conveyors Corporation of America**, **Chicago**, handling its coal and ash conveyors. The company also represents the **Springfield Boiler Company**, of **Springfield, Illinois**, and the **Cooling Tower Company**, of **New York City**.

On **January 1** the **Chambers Valve Company, Inc.**, of **New York**, was taken over by the **Bradford Draft Gear Company**, with offices at 23 West Forty-third street, **New York**; **Munsey building**, **Washington, D. C.**, and **McCormick building**, **Chicago**. **Frank H. Clark**, formerly president of the **Chambers Valve Company**, becomes vice-president of the **Bradford Draft Gear Company**, with headquarters at **New York**, while the **Washington office** will be under the direction of **Harry F. Lowman**, vice-president.

Edmund H. Walker, who will be elected president of the **Standard Coupler Company**, **New York**, effective **February 1**, on the retirement of **George A. Post**, as was announced in the *Railway Age* of **January 14**, has been connected with the company since **February, 1905**, and at present is first vice-president. Previous to his connection with the **Standard Coupler Company** he was engaged in railroad work with the **Great Northern**, the **Atchison, Topeka & Santa Fe**, the **Chicago, Burlington & Quincy**, and the **Minneapolis, St. Paul & Sault Ste. Marie**, in various departments. Mr. Walker was president of the **Railway Supply Manufacturers' Association** for the years **1917, 1918 and 1919**.



E. H. Walker

At the annual election of the **Union Railway Equipment Company**, **Chicago**, the following officers were elected: **W. B. Hall**, president and treasurer; **G. W. Clark**, controller and secretary; **A. F. O'Connor**, mechanical engineer; **E. S. Jubell**, superintendent; **H. O. Comstock**, sales agent. Mr. Jubell was formerly in charge of the forge department for the **Haskell & Barker Car Company**. The company's new forging plant, located on the **Indiana Harbor Belt**, at **Hammond, Ind.**, is now in operation.

American Brake Shoe & Foundry Company

William F. Cutler, president of the Southern Wheel Company, St. Louis, Mo., has been elected vice-president of the **American Brake Shoe & Foundry Company**, with headquarters at New York, and **William B. Given, Jr.**, assistant vice-president at New York, has also been elected a vice-president, effective January 1.

William F. Cutler was born on March 5, 1888, at Washington, D. C., and was educated at Hill School, Pottstown, Pa., and was in the class of 1909, at Sheffield Scientific School, Yale University. He began railway work as an apprentice in the Altoona (Pa.), shops of the Pennsylvania Railroad, and later served in the shops of the Hale & Kilburn Company, Philadelphia, Pa. In 1912, he entered the service of the American Brake Shoe & Foundry Company, at New York, and subsequently held various positions until 1914, when he went to St. Louis as vice-president of the Southern Wheel Company, a subsidiary of the American Brake Shoe & Foundry Company. In 1917, he was elected president of the Southern Wheel Company, which position he still retains, in addition to his new position as vice-president of the American Brake Shoe & Foundry Company. He is a son of Otis H. Cutler, chairman of the board of the American Brake Shoe & Foundry Company.

William B. Given, Jr., was born on December 7, 1886, at Columbia, Pa., and was educated at Yale University. He has been in the service of the American Brake Shoe & Foundry Company since 1911, with the exception of two years, when he served in the United States Army. He held various positions with the American Brake Shoe & Foundry Company, until 1915, when he was appointed assistant to president. From May, 1917, to May, 1919, he served as a captain of infantry in the Rainbow Division of the United States Army, and then returned to the American Brake Shoe & Foundry Company as assistant vice-president, which position he held until his recent election as vice-president of the same company as above noted.

Obituary

Harry L. Marsh, vice-president of the **Thompson-Starrett Company**, building construction, New York, died on January 13, at Overlook Hospital, Summit, N. J. Mr. Marsh had been connected with the Thompson-Starrett Company since 1912, and had been one of its vice-presidents since 1915. He was born on July 23, 1875, at Ithaca, N. Y., and was educated at Cornell University. He began work as a draftsman in an architect's office at Ithaca. He went to Chicago in 1893 and served in the engineering department of the Chicago & North Western. He then served with the architectural firms of Frost & Granger and Holabird & Roche, Chicago, and in this connection was associated with the design and construction of the Rock Island terminal, the Chicago & North Western terminal, and the Chicago & North Western office building, and many other public buildings. In 1912 he joined the staff of the Thompson-Starrett Company, in its New York office as general superintendent, and in 1915 was promoted to vice-president. As such Mr. Marsh was head of the construction department and supervised all the construction work of the Thompson-Starrett Company, including the construction of the Woolworth, Municipal and Equitable buildings, the Hotel McAlpin, in New York, the Hotel Ambassador, at Atlantic City, the passenger station



H. L. Marsh

of the New York, New Haven & Hartford, at New Haven, and other buildings. During the period of the war he directed the work on the construction of Camp Upton, Yaphank, L. I., and the Fox Hills hospital, Grasmere, Staten Island, N. Y. He also acted in an advisory capacity during the construction of the large powder plant for the United States government, known as the United States Explosive plant C, at Nitro, W. Va.

Harry R. Warnock, vice-president in charge of mechanical matters of the **Standard Stoker Company**, New York, and formerly general superintendent of motive power on the Chicago, Milwaukee & St. Paul, died suddenly of heart failure at Hagerstown, Md., on January 19. He was born at Newcastle, Pa., on July 16, 1870. He began railway work as a freight brakeman with the Pennsylvania Lines West of Pittsburgh in June, 1889, and in the same year went to the Pittsburgh & Lake Erie as a brakeman. In September, 1891, he was promoted to locomotive fireman and later was locomotive engineer, which position he held until May, 1900. From that date until July, 1904, he served consecutively as engine despatcher, roundhouse foreman and general foreman, resigning on the latter date to become master mechanic of the West Side Belt, Pittsburgh, Pa., where he remained until October, 1905, when he became master mechanic of the Monongahela Railroad. He remained in this position until September, 1913, when he was appointed superintendent of motive power of the Western Maryland, which position he held until December 15, 1917, when he was appointed general superintendent of motive power of the Chicago, Milwaukee & St. Paul. In July, 1920, he became associated with the Standard Stoker Company and at the time of his death was vice-president in charge of mechanical matters, as above noted.



H. R. Warnock

Trade Publications

EVERY DAY YOU USE AN EXIDE BATTERY.—The Electric Storage Battery Company, Philadelphia, Pa., has recently issued a 32-page illustrated booklet showing various uses of exide batteries. The object of the pamphlet is to suggest by means of artist's drawings the more important ways in which exide batteries serve in the industrial and social life of the nation.

OSGOOD RAILROAD DITCHERS.—The Osgood Company, Marion, Ohio, has recently issued a 16-page illustrated bulletin descriptive of the railroad ditcher manufactured by this company. The data includes the specifications of the ditcher, both for clamshell bucket and crane work, while line drawings show the principal dimensions, etc. The text is devoted to describing the various parts of the equipment, such as the frame, axles, boiler, hoisting machinery, etc., while illustrations show the completed equipment in operation, as well as the individual parts.

BURROWS DEFECTOSCOPE AND MAGNETIC ANALYZER.—Holz & Co., Inc., New York, has recently issued a 20-page illustrated bulletin—No. 41—describing the use of the Burrows defectoscope for the detection of internal defects in iron and steel. The history and principles of magnetic analysis are discussed in the text, the major portion of which, however, is devoted to the construction of the instrument and the manner in which it is used when making an inspection of steel rails, rods, cables or other iron or steel material. The illustrations are composed of numerous curves, diagrams and photographs covering the results of actual tests, as well as showing the manner in which the instrument is employed.

Railway Construction

CHICAGO, ROCK ISLAND & PACIFIC.—This company has awarded to the Roberts & Schaefer Company, Chicago, a contract for the installation of hoisting equipment in the company's coaling station at Selden, Kan.

MINNEAPOLIS, NORTHFIELD & SOUTHERN.—This company contemplates the construction of a 12-mile extension of its line from Northfield to Faribault, Minn.

MISSOURI, KANSAS & TEXAS.—This company is accepting bids for the construction of a roundhouse at Smithville, Tex.

PERE MARQUETTE.—This company, which was noted in the *Railway Age* of December 17 (page 1089), as receiving bids for the construction of a frame freight and passenger station at Clifford, Mich., has awarded the contract for this work to Spence Brothers, Saginaw, Mich.

TENNESSEE.—The Interstate Commerce Commission has issued a certificate authorizing this company to construct a branch line for a distance of 6 miles from a connection with its main line at the mouth of Beech Fork of New River in Tennessee.

TEXAS & NEW ORLEANS.—This company contemplates the construction of repair shops at Houston, Tex., to replace the buildings destroyed by fire on December 7.

THE CALIFORNIA RAILROAD COMMISSION has granted the Western Pacific permission to abandon that portion of the Tesla Branch lying between Moy and Carnegie.

TORONTO, HAMILTON & BUFFALO.—The Department of Public Highways, Toronto, Ont., is advertising for bids for the construction of a subway under the tracks of this company at Binkley's Corners, Ont.

UNION PACIFIC.—This company contemplates the construction of a roundhouse, blacksmith shop and repair shop at Fremont, Neb.

UNION PACIFIC.—The Interstate Commerce Commission, which on November 13 issued a certificate authorizing the construction of an extension in Scotts Bluff and Goshen Counties, Wyo., with the condition that the construction should be completed on or before December 31, 1921, has issued a further order extending the time to September 30, 1922.

WABASH.—This company contemplates the construction of a station at Macon, Mo., to cost approximately \$31,000.



Photo from Underwood & Underwood, N. Y.

The Metlac Bridge on the Line from Meixco City to Vera Cruz

Railway Financial News

AKRON, CANTON & YOUNGSTOWN.—This company has applied to the Interstate Commerce Commission for a loan of \$396,000, for 15 years, to be expended in the improvement of its facilities.

ANN ARBOR.—The Interstate Commerce Commission has approved a loan of \$250,000 to this company to enable it to provide itself with additions and betterments to way and structures at a total estimated cost of \$500,000. The applicant itself is required to finance \$250,000 to meet the loan of the government.

CHICAGO & EASTERN ILLINOIS.—The Interstate Commerce Commission has announced a hearing before Director W. A. Colston, of its Bureau of Finance at Washington, on January 20, on its application for authority to issue securities for the purpose of acquiring the properties now owned by the Chicago & Eastern Illinois Railroad in reorganization.

CHICAGO & NORTH WESTERN.—This company has applied to the Interstate Commerce Commission for a loan of \$3,000,000, for 10 years, to enable it to complete the purchase of new equipment to the amount of \$9,684,093 through an equipment trust. It is proposed to apply the \$3,000,000 toward the cash payment and to issue \$6,630,000 of equipment trust certificates in accordance with its application filed with the commission on November 29, for permission to issue \$9,630,000 of 7 per cent certificates.

DENVER & RIO GRANDE.—The Stockholders' Protective Committee has appealed to the directors of the company to remove A. R. Baldwin as receiver of the road. The request was made in a letter which read in part as follows: "In view of the fact that Alexander R. Baldwin is vice-president of the Western Pacific Railway Company, and is thereby connected with the Western Pacific interests, which are seeking to wreck and destroy the Denver & Rio Grande Railroad Company, and in view of Mr. Baldwin's refusal to take any steps to protect the interests of the Denver & Rio Grande or its stockholders in this great emergency, the committee believes it to be your plain duty to take immediate steps to cause the removal of Mr. Baldwin as such receiver." Mr. Baldwin was asked by the stockholders to protect their interests, but is alleged to have replied that he had nothing to do with the pleadings in the case.

DIVIDENDS have been declared by the following roads:

Central of New Jersey.—\$2. quarterly, payable February 1 to holders of record January 27.

Huntingdon & Broad Top.—Preferred, 75 cents per share (1½ per cent), payable February 15 to holders of record February 1.

EL PASO & SOUTHWESTERN.—This company has applied to the Interstate Commerce Commission for authority to convert its present authorized capital stock, consisting of 350,000 shares of a par value of \$100, to 1,000,000 shares of stock without par value, of which 750,000 shares are to be exchanged for the \$25,000,000 par value of shares outstanding and 250,000 shares which are to be held in the treasury. The application says that the Transportation Act provides for the distribution of net profits in proportion to the value of the property irrespective of the par value. The general valuation of the railroads by the Interstate Commerce Commission is under way, and the value of the railroad will change from time to time with changing conditions and with additions and betterments. It will be impracticable to allow the outstanding stock issue to conform to these changes, and the issue of stock of no par value will enable the stock issue to conform closely to the actual value as it changes from time to time. It is stated that the company has for many years put large sums of money into the property without issuing stock against it, and it is believed the present par value has no relation to the actual value of the road. The commission has ordered a hearing on the application at Washington on January 24.

GRAND TRUNK.—Dillon, Read & Co., formerly Wm. A. Read & Co., are offering \$12,000,000 15-year 6½ per cent equipment

trust certificates, guaranteed by the Canadian government, at 95.40, yielding 7 per cent. The certificates are to be issued under the Philadelphia plan and will cover equipment costing \$16,000,000. The indenture creating these certificates provides for a sinking fund of \$400,000 annually, beginning the date of issue, which is February 1, 1921, which fund must be used for the purchase of certificates at or under par if obtainable. The balances of the sinking fund instalments not so used must be devoted to the purchase either of certificates of this issue or of Canadian government obligations maturing before the maturity of these certificates.

HOCKING VALLEY.—This company has applied to the Interstate Commerce Commission for an order authorizing the authentication and delivery of \$2,037,000 of its general mortgage bonds and the pledge of \$2,220,000 of its general mortgage bonds to secure a loan of \$1,665,000 from the United States government.

KANSAS, OKLAHOMA & GULF.—This company has been authorized by the Interstate Commerce Commission to issue \$2,744,750.11 of series A 6 per cent bonds, \$82,000 of series B 6 per cent cumulative income bonds, and not exceeding \$6,120,500 of series C 6 per cent cumulative income bonds, not exceeding \$9,120,500 of preferred stock, not exceeding \$729,640 of common stock; \$51,378.50 of 6 per cent equipment trust notes in procurement of equipment furnished by The Barney & Smith Car Company, and \$346,645.71 of 6 per cent equipment trust notes in procurement of equipment furnished by the American Car & Foundry Company.

MAINE CENTRAL.—The Interstate Commerce Commission has approved a loan of \$320,305 to this company to aid the company in meeting its maturing indebtedness. The company itself is required to finance \$80,000 to meet the loan of the government.

MINNEAPOLIS & ST. LOUIS.—This company has been authorized by the Interstate Commerce Commission to issue promissory notes to the amount of \$230,000 in connection with the purchase of five passenger locomotives.

MISSOURI PACIFIC.—This company has applied to the Interstate Commerce Commission for a certificate authorizing it to purchase the stock of the Little Rock & Argenta Railway.

SACRAMENTO NORTHERN.—The special committee, which was appointed to consider the offer made by the Western Pacific to purchase the road, has recommended against the terms of the sale, holding that the Western Pacific price was inadequate and any better offer could not be obtained.

SOUTHERN.—This company has applied to the Interstate Commerce Commission for authority to issue and sell \$950,000 of its first consolidated mortgage 5 per cent gold bonds, payable July 1, 1924, to provide funds for the redemption of a like amount of serial mortgage 5 per cent, Series D, bonds of the Virginia Midland, maturing March 1.

THE TREASURY DEPARTMENT has announced the payment of loans of \$3,759,000 to the Chesapeake & Ohio, \$500,000 to the Wheeling & Lake Erie, and \$5,200,000 to the National Railway Service Corporation from the \$300,000,000 revolving fund, on certificates of the Interstate Commerce Commission, since the issuance of the list published in the *Railway Age* last week. These bring the total of loans actually made up to \$175,904,937.

WESTERN MARYLAND.—The Interstate Commerce Commission has approved a loan of \$622,800 to this company to enable the carrier to provide itself with additions and betterments to ways and structures.

WICHITA FALLS & NORTHWESTERN.—This company has applied to the Interstate Commerce Commission for a loan of \$684,000 to be used in putting its track in condition, and also for authority to issue \$855,000 of first mortgage bonds to be pledged as collateral for the loan.

WILMINGTON, BRUNSWICK & SOUTHERN.—The Interstate Commerce Commission has approved a loan of \$90,000 to this company to aid in meeting its maturing indebtedness and providing itself with additions and betterments to way and structures at a total estimated cost of \$125,000. The carrier itself is required to finance about \$35,000.

Railway Officers

Executive

E. S. Taylor, assistant to the president of the Pullman Company, has been appointed director of purchases in addition to his regular duties, with headquarters at Chicago, effective January 14.

L. E. Johnson, who retired on January 1 as chairman of the board of directors of the Norfolk & Western, was born at Aurora, Ill. He first entered railway service in 1866 as a



L. E. Johnson

locomotive fireman on the Chicago, Burlington & Quincy, and remained with the mechanical department of that company until 1886, having held various positions, including that of master mechanic at Aurora. In 1886 he was appointed superintendent of the St. Louis division and two years later was transferred to the Chicago division in the same capacity. In 1890 he went to the Montana Central (now a part of the Great Northern), as superintendent. Three years later he became superintendent of the

Michigan division of the Lake Shore & Michigan Southern. In 1897 he went to the Norfolk & Western as general superintendent. In 1902 he was elected vice-president and general manager, and in 1904 president and general manager. Mr. Johnson was elected chairman of the board in 1918.

Operating

George W. Holdrege, whose portrait is published herewith, retired as general manager of the Chicago, Burlington & Quincy—lines west of the Missouri river—with head-



G. W. Holdrege

quarters at Omaha, on January 1, as announced in our issue of December 24. A short sketch of Mr. Holdrege's railway career was published in the issue mentioned. As stated then, he retired after fifty-one years of continuous service with this one road. The mere chronological details of Mr. Holdrege's career do not, however, give an adequate idea of his railroad life. He had an important part in the early construction of the Burlington lines west of the river. It was throughout his long career his policy

to encourage by all legitimate means every industry on the road, especially agriculture, and to his efforts were largely attributable the growth of the road's traffic. It is a notable fact that the work of constructing the Burlington's western lines, of which Mr. Holdrege was in charge, was never

abandoned, even during the hard times of the nineties, and that between 1892 and 1894, a period of general suspension of railroad building, the line from Nebraska to Billings, Mont., was built. In the years when the railways were active participants in politics he was a great political power in Nebraska. Mr. Holdrege's first position with the Burlington was as a paymaster and storekeeper in the office of the Burlington & Missouri River Railway at Plattsmouth, Neb., which position he took in 1869. A year later he was transferred to the offices of the company at Burlington, Iowa, and afterward entered the train service, serving for one year as a conductor. He was then made superintendent of construction of the Chariton branch westward from Chariton, Iowa. In 1872 he was made trainmaster at Burlington, and the next year assistant superintendent at Plattsmouth. He became general superintendent of the lines west of the river in 1878, assistant general manager in 1882, general manager of the Burlington & Missouri River railway in 1884, and general manager of the Chicago, Burlington & Quincy lines west of the river in 1903.

W. L. White, whose appointment as general manager of the Yosemite Valley was announced in the *Railway Age* of December 31 (page 1183), was born in Bevier, Mo., on December 8, 1885, and entered railway service in 1905 with the Chicago & Eastern Illinois. In 1907 he left the service of the Chicago & Eastern Illinois to accept a position in the operating department of the Chicago, Rock Island & Pacific, where he served until 1909, when he took service with the Northern Pacific, also in the operating department. In 1911 he was employed in the traffic department of the Oregon Short Line, and after two years' service with that company, he entered the traffic department of the Southern Pacific. In 1915, after a year of service with the Sierra Railroad of California, Mr. White was appointed traveling freight agent on the Salt Lake & Utah. He was promoted to general freight and passenger agent of that road in 1917 and in 1920 he was made assistant general manager of the Yosemite Valley, with headquarters at Merced, Cal., the position which he held at the time of his recent promotion.

Financial, Legal and Accounting

J. H. Howard, general claim agent of the Chicago & Alton, with headquarters at Chicago, has been appointed assistant controller on the Chicago, Milwaukee & St. Paul, effective



J. H. Howard

January 20. Mr. Howard was born at Cincinnati, O., in 1879, and entered railroad service in the accounting department of the Cincinnati, New Orleans & Texas Pacific, now a part of the Southern Railway System. In 1898, he entered the service of the Chicago & Alton, being employed in the accounting department of that road in Chicago. During the next 10 years he was made station agent, traveling auditor, freight auditor, freight claim agent and general claim agent. In 1908, he left the service of the Chicago & Alton to take a position on the Chicago Great Western at St. Paul. He remained with that road for five years and in 1913, returned to the Chicago & Alton as general claim agent. During the war Mr. Howard was called to Washington as manager of the Claims and Property Protection Section of the United States Railroad Administration. He returned to the Chicago & Alton as general claim agent in March, 1920, and was serving in that position at the time of his recent appointment.

C. F. Clement, treasurer of the Minneapolis, St. Paul & Sault Ste. Marie, with headquarters at Minneapolis, Minn., has retired after 34 years of service with the Soo Line, effective January 1. **H. M. Paist**, assistant treasurer, has been elected treasurer, succeeding Mr. Clement.

Frank Nay, vice-president and controller of the Chicago, Rock Island & Pacific, with headquarters at Chicago, has resigned to become controller of the Allied Chemical & Dye



Frank Nay

Corporation, of New York, effective February 1. Mr. Nay was born on April 19, 1861, near Columbus, Ohio, and entered railway service in April, 1883, as a statistical clerk in the office of the general auditor of the Missouri Pacific. From April, 1884, to April, 1887, he was employed as a clerk in the accounting department of the Texas & St. Louis, now the St. Louis Southwestern. On the latter date he was made traveling auditor on the same road, a position which he held until January, 1889, when he

was made chief clerk in the general auditor's office. He was appointed auditor on the Minneapolis & St. Louis in April, 1889, and in April, 1902, he was made auditor on the Iowa Central, in addition to his duties with the Minneapolis & St. Louis. Mr. Nay was appointed assistant controller on the Rock Island in April, 1903, and after a year and a half in this position he was made general auditor. He served as general auditor until December, 1909, when he was appointed controller. He was elected vice-president and controller in May, 1919. As chairman of the rate committee of the Association of Railway Executives, Mr. Nay had charge of securing statistical data furnished Congress during the preparation and discussion of the Esch-Cummins Bill.

Traffic

Homer Cain has been appointed general agent for the Nashville, Chattanooga & St. Louis, with headquarters at Kansas City, Mo.

C. W. Brosius has been appointed general freight agent on the Texas & Pacific, with headquarters at New Orleans, La., effective January 1.

F. G. Stebbins has been appointed district freight agent on the Baltimore & Ohio with headquarters at Dallas, Tex., and **C. W. Browder** has been appointed district freight agent with headquarters at Kansas City, Mo.

W. M. Knapp has been appointed general freight agent of the Central of Georgia in charge of freight traffic agencies, with headquarters at Savannah, Ga. **C. D. Chancellor** has been appointed assistant general freight agent, with the same headquarters. These appointments were effective January 1.

W. R. Callaway, passenger traffic manager of the Minneapolis, St. Paul & Sault Ste. Marie, with headquarters at Minneapolis, Minn., has retired, effective January 1. **H. M. Lewis**, general passenger agent, has taken over the duties of the passenger traffic manager, that office having been discontinued.

F. E. Lewis has been appointed assistant general freight agent on the New York Central, with headquarters at Detroit, Mich., with jurisdiction over the city of Detroit and the Detroit branch to and including Wyandotte, Mich. The office of general agent at Detroit has been abolished. **E. G. Howard** has been appointed division freight agent on the New York Central with headquarters at Hillsdale, Mich.

R. R. Hollinger, general agent on the Texas & Pacific, with headquarters at Pittsburgh, Pa., has been transferred to New York, succeeding **C. W. Brosius**, who has been promoted to general freight agent, with headquarters at New Orleans, La. **G. C. Whitney**, general agent, with headquarters at Kansas City, Mo., succeeds Mr. Hollinger. **O. I. Shannon** succeeds Mr. Whitney. **H. A. Lowry**, general agent, with headquarters at Birmingham, Ala., has been transferred to New Orleans, La., succeeding **J. L. Hogan**, who has been promoted to foreign freight agent, with the same headquarters. **T. C. Taylor** succeeds Mr. Lowry. The appointments and changes were effective January 1.

W. H. Wharton, general northern agent of the Nashville, Chattanooga & St. Louis, with headquarters at Chicago, has been promoted to assistant general freight agent, with headquarters at Nashville, Tenn., effective January 1. Mr. Wharton entered the service of the Nashville, Chattanooga & St. Louis in 1900 as a stenographer in the offices of the company in Nashville, and has spent his entire railroad career with this road. After being made soliciting agent, he was promoted to traveling freight agent and in 1907 became commercial agent with headquarters at Chicago. During the war Mr. Wharton was commissioned a lieutenant in the Ordnance Reserve Corps. **E. J. Stegner**, general agent, with headquarters at Kansas City, Mo., succeeds Mr. Wharton at Chicago.

Mechanical

J. W. Chandler has been appointed master mechanic of the Kansas City Southern, at Pittsburg, Kan., effective January 1, succeeding **C. J. Burkholder**, resigned to enter the service of another company. **C. L. Adair** succeeds Mr. Chandler as master mechanic at Shreveport, La.

W. L. Robinson, master mechanic of the Baltimore & Ohio with headquarters at Washington, Ind., has been appointed superintendent fuel and locomotive performance with headquarters at Baltimore, Md., succeeding **E. E. Ramey**, who has been assigned to other duties.

F. N. Pease, chief chemist of the Pennsylvania, with headquarters at Altoona, Pa., retired from active service on January 1, in accordance with the pension regulations of that company. Dr. Pease has been succeeded by **M. E. McDonnell**, who was assistant chief chemist, and **T. W. Fisher** has succeeded Dr. McDonnell as assistant chief chemist.

Engineering, Maintenance of Way and Signaling

D. Fairchild has been appointed acting supervisor of bridges and buildings on the Puget Sound division of the Northern Pacific, with headquarters at Seattle, Wash., succeeding **W. E. Bradley**, who has been granted a leave of absence, effective December 1, 1920.

Railroad Administration

J. G. Code has been appointed staff officer of the Railroad Administration, vice **W. J. Harahan**, resigned to become president of the Chesapeake & Ohio. **R. J. Turnbull** and **C. T. O'Neal** have been appointed assistants to the staff officer. The staff officer with his assistants will, in addition to the general matters heretofore handled by that office, adjust all claims remaining unadjusted by Railway Adjustment Boards Numbers 2 and 3 after January 10.

Purchasing and Stores

Edmund T. Burnett, whose retirement as general purchasing agent of the Norfolk & Western was announced in the *Railway Age* of December 24 (page 1138), was born in Philadelphia, Pa., and was educated at Saunders Institute. He was engaged in mercantile pursuits for several years after he had completed his schooling and first entered railway service in 1882 as chief clerk to the purchasing agent of the Norfolk & Western. In 1891 Mr. Burnett was appointed assistant purchasing agent, with headquarters at Roanoke, Va. In 1893 he was promoted to purchasing agent with headquarters

at Philadelphia. When the road was reorganized in 1896 Mr. Burnett transferred his headquarters to Roanoke. When the government assumed the operation of the railroads Mr. Burnett was appointed, first, an associate member of the Eastern Regional Purchasing Committee and, later, regional purchasing agent for the Pocahontas region. When the roads were returned to their owners Mr. Burnett was appointed general purchasing agent of the Norfolk & Western.

Obituary

David L. Bush, assistant to the vice-president of the Chicago, Milwaukee & St. Paul, with headquarters at Chicago, whose death was announced in the *Railway Age* of December



D. L. Bush

31 (page 1184), had been in the service of the St. Paul for more than 45 years. Mr. Bush was born on July 31, 1855, at Sharon, Wis., and entered railway service in December, 1872, as a night operator on the Western Union Railroad, now a part of the St. Paul system. In 1875 he was made chief operator in the train dispatcher's office at Racine, Wis., and served there until January, 1877, when he was made train dispatcher. On May 1, 1877, in addition to his other duties, Mr. Bush was made superintendent

of the Western Union and the Sabula, Ackley & Dakota Railroad, which has also been taken over by the St. Paul. In September, 1880, he was made superintendent of the Racine and Southwestern division of the Chicago, Milwaukee & St. Paul, and continued to serve in that capacity until July, 1887, when he was transferred to the James River division. In February, 1888, Mr. Bush was made superintendent of the Southern Minnesota division, in 1890 he was transferred to the Hastings and Dakota division, and in 1894 he became superintendent of the River division, with headquarters at St. Paul, Minn. In April, 1898, Mr. Bush was promoted to assistant general superintendent, with headquarters at Milwaukee, Wis., and three years later he became general superintendent. He served as general superintendent until October 1, 1909, when he was promoted to general manager, with headquarters at Chicago, and in January, 1913, he was elected vice-president in charge of operation. During the period of federal control, Mr. Bush served as assistant to the federal manager of the St. Paul, having been appointed to that position in August, 1918. In March, 1920, he was made assistant to the vice-president, and was serving in that position at the time of his death.

WESTERN PROGRESSIVEISM and eastern conservatism are said to have clashed sharply at the annual convention of the American Economic Association in Atlantic City, N. J., on December 27. C. O. Ruggles, professor in the University of Iowa, took issue with Prof. Frank H. Dixon, of Princeton University, who declared that the nation had been carried dangerously near paternalism through some features of the Transportation Act, 1920. "We have reached a point in the line of inquisitorial supervision where we may well stop and take account of stock. If we insist upon carrying regulation to a point where capital rebels, then there will be a decline in the character of service." "We have not gone even half way to the danger point of regulation," replied Prof. Ruggles. "We shall not get the right kind of service until terminals are controlled by one terminal corporation. It is about time to apply the law of eminent domain in clearing up that situation. Do this and we may eliminate the problem of government ownership."